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VOLUME 3
ISSUE 1

A+

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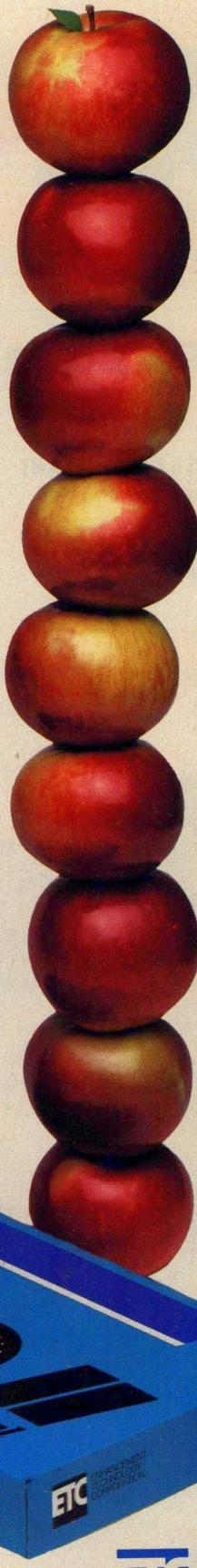

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VOLUME 3/ISSUE 1/JANUARY 1985

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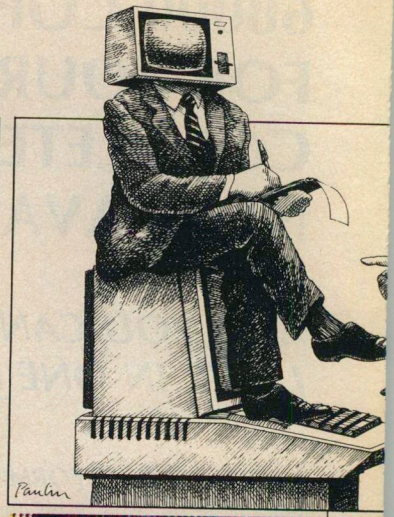

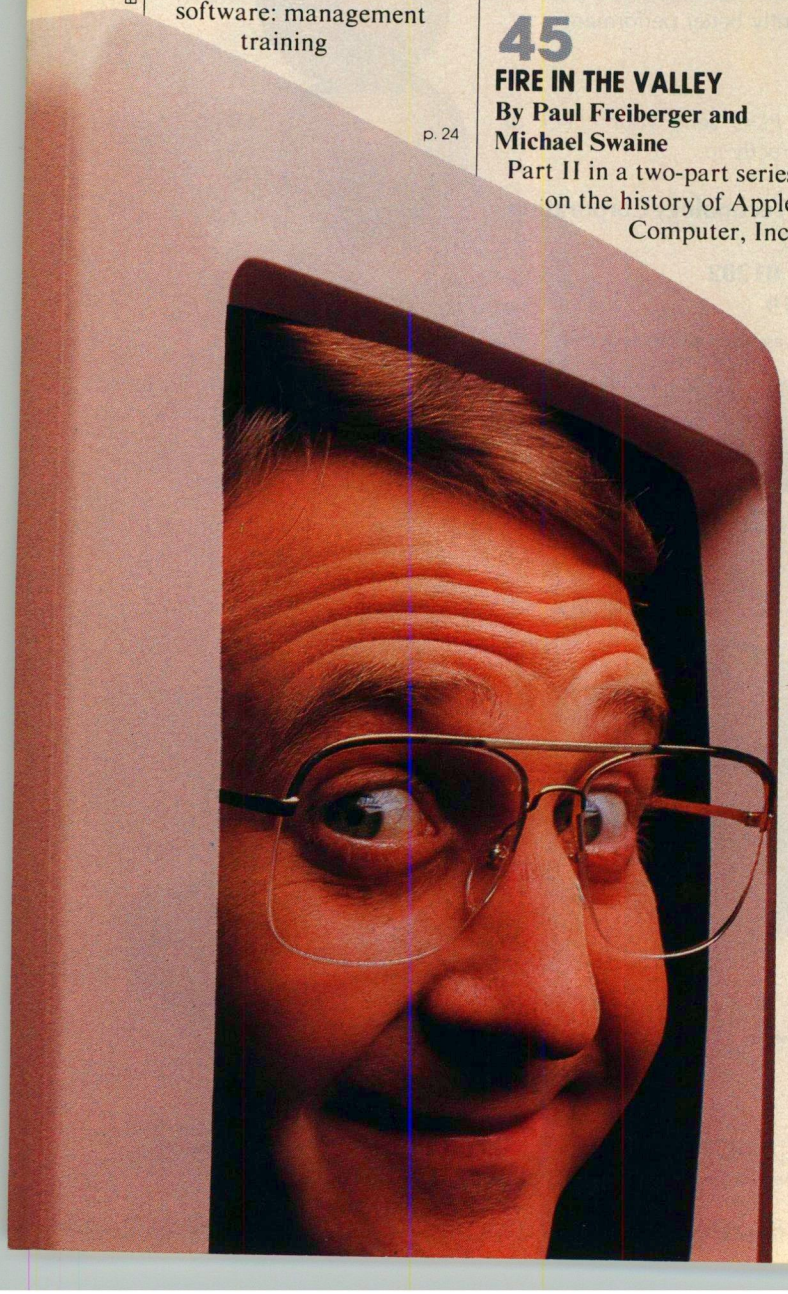

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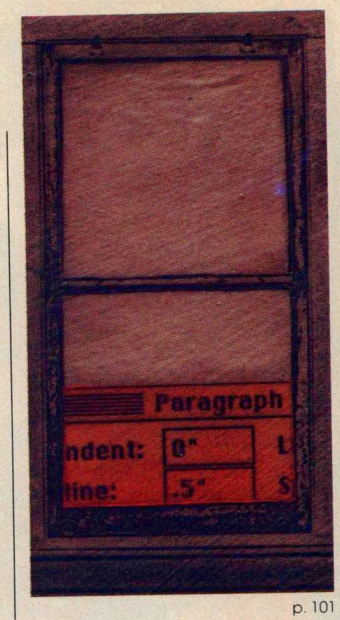

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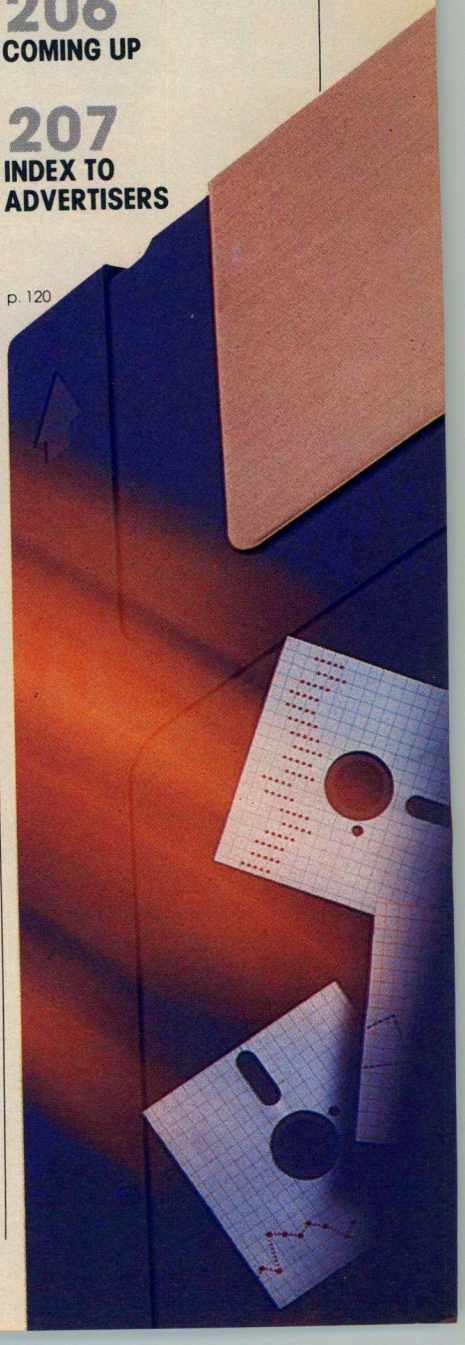

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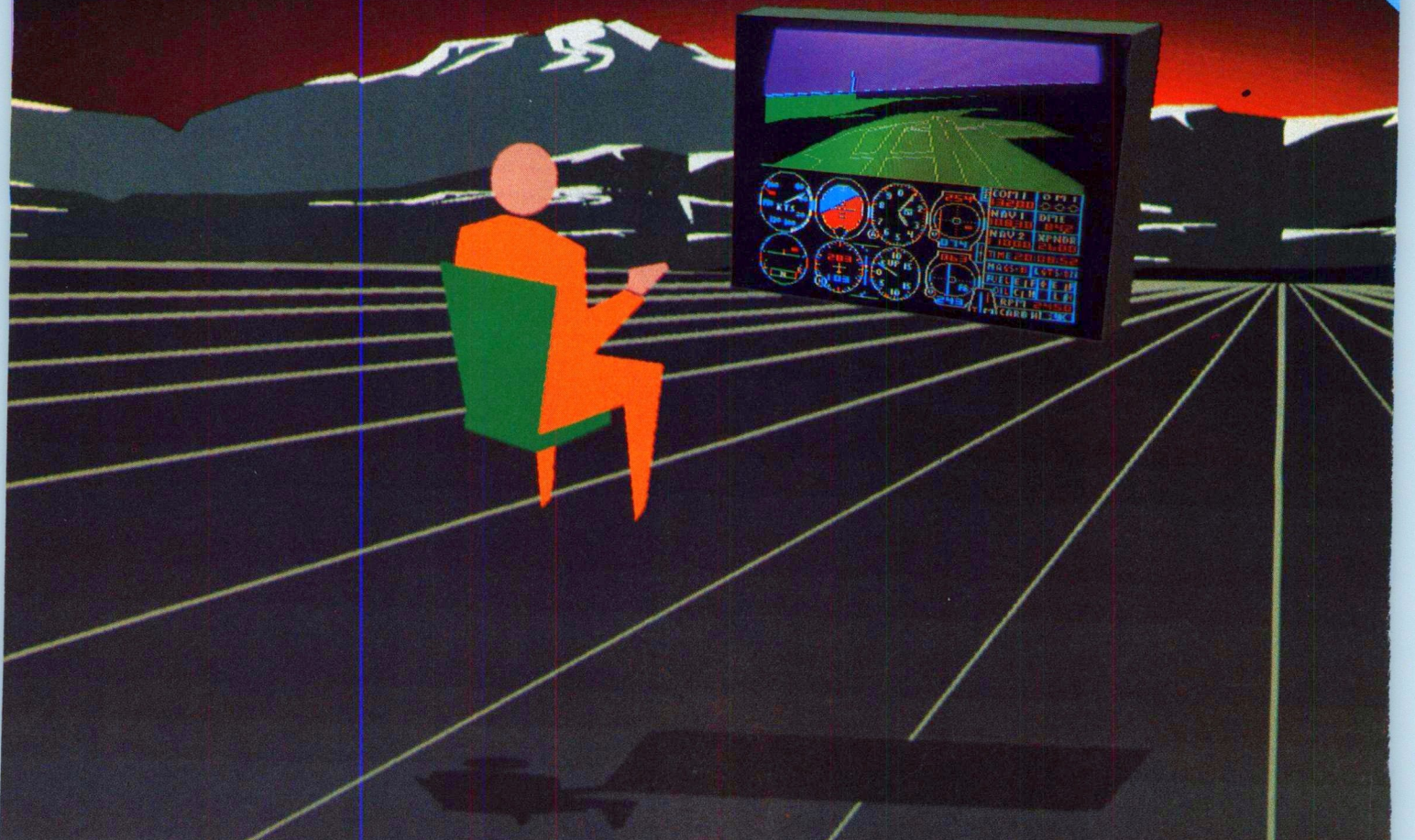

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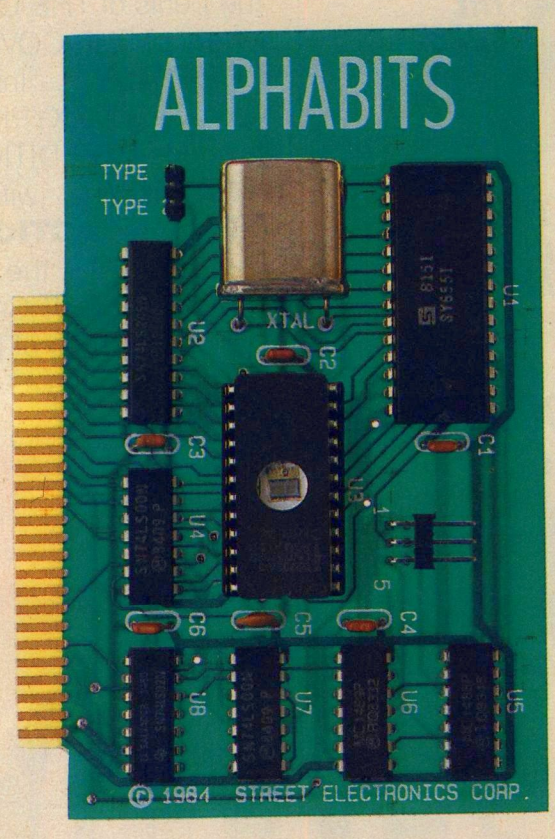

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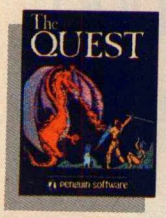

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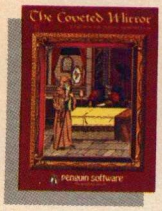

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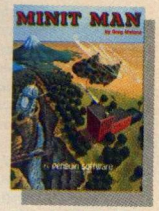

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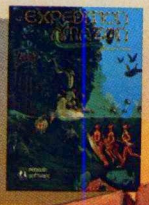

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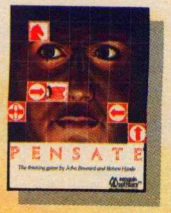

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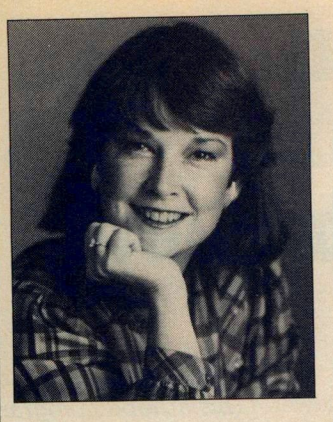

Look for more 'how to' articles and product reviews, a new graphics column, a computer tutor, and a few face-lifts as we move into 1985.

RESOLUTIONS FOR THE NEW YEAR

Now that our wallets are slimmer and our waistlines are bigger, it's time to look forward to the rest of the year. The New Year for many people marks a time to take on new challenges and leave behind old habits. Resolutions, though, are no good unless you announce them publicly, so here are some of our resolutions and plans for 1985.

Our primary resolution is to put as much useful information into each issue as possible and to bring this material to you in an interesting, insightful, and educational way. We plan to publish lots of "how to" articles, providing you with the best value for your money.

You will notice that some of our old habits have changed. We've decided to bring the column "How to dBASE II" to a close. This column was a terrific success, and we plan to continue doing tutorials of this type on various kinds of applications. Look for tutorials under the heading "The Computer Tutor."

Dennis Brothers will be breaking away from his column, "Under the Desktop," but will still provide occasional articles for the Macintosh section. Thom Hogan's column, "The Mac According to Hogan," will increase to monthly frequency. We are also delighted to announce that we have a new regular column on graphics, "Speaking of Graphics," which is being written by our favorite graphics gurus, Roberta Schwartz and Michael Callery. Roberta and Michael will be keeping you up to date on the latest developments in the world of graphics. Look for the first installment in this issue.

Since we all concur that product reviews are critically important in helping you make buying decisions, we have decided to add even more reviews. We will soon be providing a minireview section every other month that will include numerous products we think are worth adding to your collection of equipment and software. We've also decided to initiate similar coverage for books. We'll launch our book-review section with two articles: an in-depth article on the books that can form a basis for your Apple reference library and an overview of Apple's manuals.

Our "That's Entertainment" section will be getting a face-lift, as well as a content overhaul. It will evolve into a section of short reviews covering a wide range of entertainment products, from games to musical instruments. We also have a secret weapon that we'll reveal shortly.

Our Macintosh coverage will evolve throughout the year as the market does. Each month we will have at least one software review, a feature article, Thom Hogan's column, and MacTips. Macintosh product announcements will move to the general product-news section, whose new name is "Pipeline." Please remember to send us your tips on using the Mac.

We have lots of other ideas and plans, including several articles on repairing your Apple computer and accessories. Other upcoming articles will deal with such topics as voice recognition and synthesis, mass storage, and information management—and that's just the tip of the iceberg.

We are not the only ones who are making plans for the year ahead. I know that Apple has all sorts of things planned for 1985, from a spiffy laser printer, to a compact hard-disk drive, to a color option for the Macintosh, and much much more. We are looking forward to an interesting and exciting year of covering the burgeoning Apple market. +

Maggie Canon

MAGGIE CANON/**EDITOR**

The word is out on word processors. Format-II® ranked number one.

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SCREEN WRITER II™	2
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MEGAWRITER™	7
APPLE WRITER II™	8
PERFECT WRITER™	9
CORRESPONDENT™	10
SPELLBINDER™	11
MAGIC WINDOW II™	12
ZARDAX™	13
SUPERTEXT 40/80™	14
GUTENBERG™	15
WORD HANDLER™	16
SELECT™	17
SANDY™	18

Reviewed by John Martellaro, September 1983, based on Peelings II rating system for performance and performance to price ratio.

In the words of the Peelings II reviewer: *"This is the best program I have seen for people who do a lot of work with mailing lists, form letters and short correspondence."*

An easy to follow manual.
Essential to any good program is a manual that's clear and understandable. The Peelings II reviewer describes the Format II manual. *"All in all, it is one of the best word processor manuals I have seen. The latest documentation is a model of clarity and organization."*

Put it all together. Then add features such as support of hard disk drives and a standard DOS text file format compatible with spellers and communications programs, and it's not hard to see why Format-II has earned the number one rating.

The words of the Peelings II reviewer sum it up: *"I cannot think of another word processor that would be better overall for business use."*

Thanks Peelings II. We couldn't have said it better ourselves.

For a reprint of the full review, or to order Format-II, contact: Kensington Microware, Ltd. 251 Park Avenue South, NYC, NY 10010, (212) 475-5200.

Format-II requires 64 K and an 80 column card.

Format-II is a registered trademark of Kensington Microware Ltd.
Peelings II is a registered trademark of Peelings II, Inc. © 1983 Kensington Microware Ltd.

KENSINGTON™ MICROWARE

CIRCLE 277 ON READER SERVICE CARD

LETTERS TO THE EDITOR

A+ OVERSEAS

Dear *A+*,

While on vacation recently, it was my good fortune to discover a copy of your magazine on sale in Singapore. Owning an Apple IIe, I immediately purchased the magazine, Volume 2, Issue 3, March 1984.

I was very impressed with the entire magazine and in particular the tutorial "How to dBase II" by Robert Cowart. The article certainly makes the software more friendly.

John J. Stump
Riyadh, Saudi Arabia

THE ULTIMATE VOLUNTEER

Dear *A+*,

I'll bet you think grandmothers and Macintosh mean apple pie for supper. Look again. The Macintosh on the kitchen counter will never be in a pie but it will list all the recipes and print them into booklets to be sold at the next church bazaar. Right now, the Imagewriter is chugging out this month's newsletter for the Garden Club.

Most of the current advertising promotion for personal computers has failed to recognize the market potential that exists in the volunteer organizations, staffed primarily by women 50 to 65 years old. The computer customer doesn't have to be a student or a business professional to appreciate the advantages of a home computer.

The Macintosh can handle record-keeping chores, process club newsletters, and produce eye-catching bulletins in the time once used to persuade a committee to meet. Furthermore, a Macintosh responds to duty without complaint.

It was while I was seeking a dedicated word-processing program that I discovered the Macintosh. At first the salesman assumed I was waiting for a husband or son. It never occurred to him that the middle-aged woman watching him demonstrate the Macintosh to a college student was also a potential customer. When he apologized, I confessed I had not been in the market for a computer until I came in contact with the Macintosh.

The MacPaint feature and the versatile Imagewriter really sold me.

I realized that my creativity could reach beyond the use of words and expand into computer sketches. More importantly, a personal computer would save me precious time by allowing me a quick and convenient means of organizing my records.

When I announced I had purchased the Macintosh and discarded my electric typewriter, there were some strange reactions. My friends thought it was menopausal insanity. Even my son, who claims to be "into computers," thought its use would not justify its cost. He was wrong.

Irene Koch
Gowanda, NY

PLEASED WITH A+

Dear *A+*,

The August 1984 issue was the first issue of *A+* that I have read. I was very pleased with the complete coverage of all Apple products—including the Lisa, which we have at work. Keep up the good work!

Mark Austin
Palmer, MA

CORRECTION

In the article "The Final Frontier" (October 1984 issue of *A+*), on page 85, the last sentence under the subhead The Price of Power should have read as follows:

"The cost of Search Helper involves the annual license fee of $200 and the purchase of a package of either 700 or 300 searches. The cost of 700 searches is $1950, and 300 searches cost $1050. The packages have no time limit on usage and are renewable when near depletion."

MUSIC PROGRAMS

Dear *A+*,

Congratulations on the timeliness of your music article "Sounds" by Freff (October 1984). The popularity of music devices for the Apple is increasing rapidly now, and your article helped to introduce this complex and sometimes confusing field.

The article is absolutely correct in stating that if you are at all serious about having fun with Apple music, you need a hardware music card like ours or the others mentioned. Software-only systems quickly become limiting as you grow in your own talent and abilities. Our Music Card MC1 not only allows more simultaneous notes and control over timbre (as detailed in the article), but also allows exploration of volume, stereo position, and white noise.

The article is also right in praising the method Music Construction Set uses to enter music. Since 1979 ALF has been using game paddles (we support the KoalaPad and joysticks, too) for music entry, and Apple Computer has cited our Music Entry program as one of two examples of good "human engineering." Paddle entry is also great for those of us who don't play the piano.

When the article says you should "take one more step" to upgrade from a music card to a keyboard system, it should have been pointed out that the step is from $169 for our MC1 to more than $1400 for the keyboard systems mentioned. Quite a step!

ALF products was inadvertently left off the manufacturers' list at the end of the article. Readers who would like information on our product line should contact us at ALF Products, Inc., 1315F Nelson Street, Denver, CO 80215; (303) 234-0871 or (800) 321-4668.

Keep up the good work!

Rick Harman
Vice President
ALF Products, Inc.

You live so

A 3M diskette can make one read/write pass on every track, every hour, every day for 200 years and still be in terrific shape.

Has 3M discovered the floppy fountain of youth?

In a way, yes.

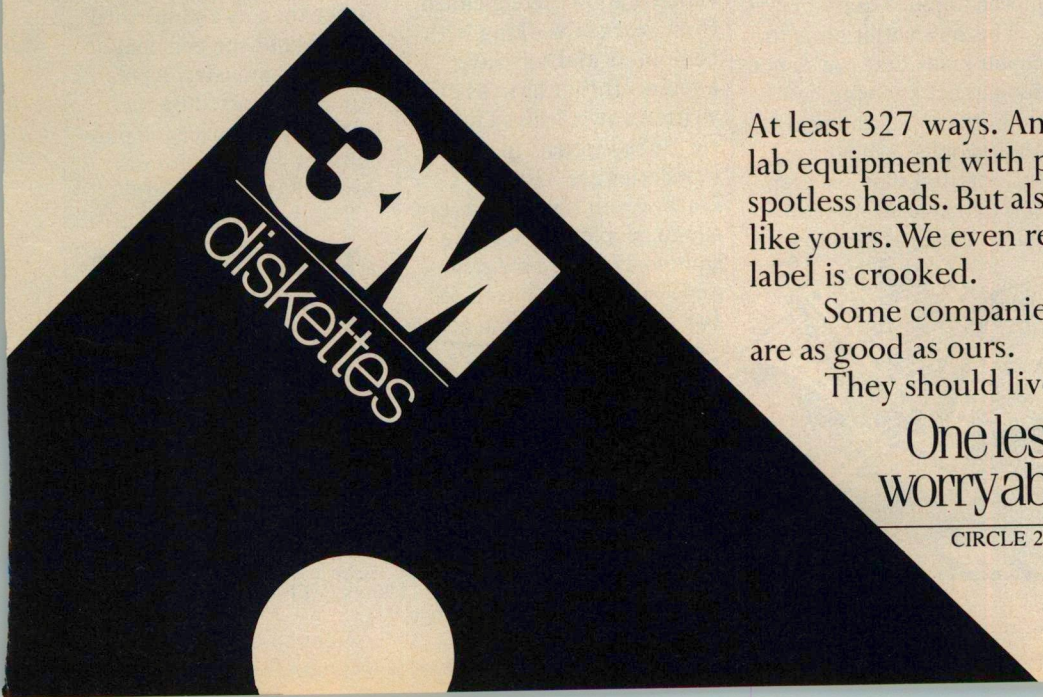
We discovered that if you want to make a floppy that's certified 100% error-free and guaranteed for life, you have to make every last bit of it yourself.

That's why we're the only company that controls every aspect of the manufacturing process.

We make our own magnetic oxides. And the binders that attach them to the dimensionally stable substrate. Which we make ourselves from liquid polyester. Which we make ourselves.

We also test our floppies.

should long.



At least 327 ways. And not just on exotic lab equipment with perfectly aligned, spotless heads. But also on office equipment like yours. We even reject a diskette if its label is crooked.

Some companies claim their floppies are as good as ours.

They should live so long.

One less thing to worry about.

CIRCLE 289 ON READER SERVICE CARD

A+ DISPATCHES

NOVEL, NOT CLASSIC

Laugh now, but the day is drawing near when you may be seeing not just *Jungle Lust* and *Love's Savage, Wild Passion* on the paperback racks at 7-Eleven, but also *Hot Chips* and *The Computer That Loved Me*.

No, it's not Compu-Sex, exactly—it's the dawn of the computer-written novel. The first mass-market computer novel was recently published by Warner Software/Warner Books. It's the first big-publicity publication of prose and poetry composed by a computer. Called *The Policeman's Beard Is Half Constructed*, the novel isn't exactly great art, but it's a fascinating read.

Here's one excerpt: "Bill sings to Sarah. Sarah sings to Bill. Perhaps they will do other dangerous things together. . . . They have love but they also have typewriters. That is interesting." Programmer William Chamberlain filled the memory of the author/computer, called Racter, with rules on English grammar, an appropriate vocabulary, and syntax directives to help Racter construct plausible English sentences. The computer simulated thought and plot by randomly generating phrases (sounds like some people we know). The text is illustrated by artist Joan Hall.

Chamberlain doesn't claim Racter's work has the depth of Dostoyevski, but he's still aware of the commercial possibilities: "Right now it would be rather difficult to get a book that would be indistinguishable from a human author's work, but it is certainly within the capability of the computer to produce a good junk novel."

Harold Robbins, watch out!

TECH TALK FOR NONTECHIES

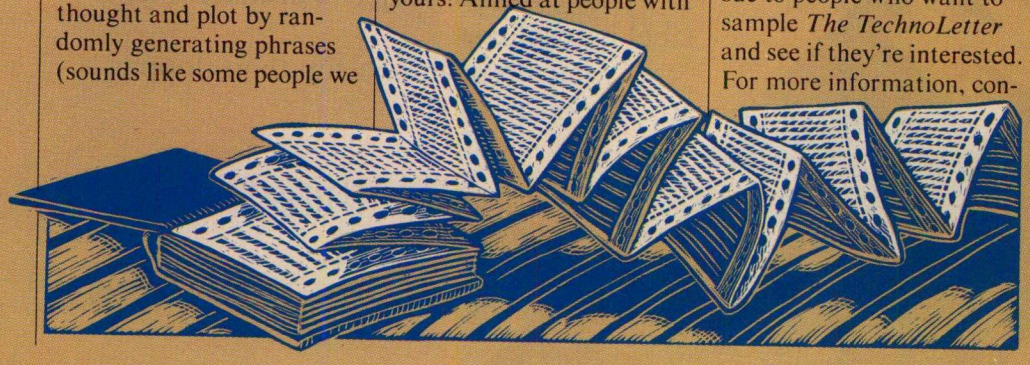
You can admit it; we won't put any guilt trips on you here. Yes, even though you read this magazine diligently, aren't there a few items in its pages you can't quite make heads or tails of?

One possible supplement to our extremely helpful magazine might be a new newsletter, called *The TechnoLetter*, designed strictly for nontechnical microcomputer users.

This newsletter aims to let you know that you're not alone in not knowing how to use Lotus 1-2-3 and that other people have horror stories to tell that are even more bloodcurdling than yours. Aimed at people with

CP/M cards or with large amounts of RAM to play with, this newsletter will give tidbits on using popular programs and teaching yourself the tricks of the trade.

Anne Guthrie, director of The TechnoLit Center in Washington, D.C., says she decided to publish the newsletter not only to give her computer-training center a "national presence," but also to pass on her specialized knowledge gleaned from years of working with computers and software. "I know stuff that hasn't been written down," says Guthrie. Subscriptions to the newsletter are $30, but Guthrie will send a free issue to people who want to sample *The TechnoLetter* and see if they're interested. For more information, contact *The TechnoLetter* at 1001 Connecticut Avenue, N.W., Suite 628, Washington, DC 20036.



LEADERS OF THE PACK

Apple Computer's business position is secure for next year, even if it's in second place, according to a survey of 92 newspaper editors conducted by the Griggs-Anderson firm in San Francisco.

The surveyors asked the editors which company they thought would be the personal-computer-industry leader by this spring. Not surprisingly, 63% chose IBM, but 25% selected Apple as the next frontrunner. Strangely enough, when asked which company came to mind first, the editors cited IBM, then Apple, followed distantly by Tandy, Commodore, and Hewlett-Packard.

We're not sure how much this survey served as a name-recognition test rather than as an informed guess about the personal-computer industry. Apple can be comforted by the fact that, whatever the publicity, at least the editors can spell its name right.

THEY GAMBLED ON APPLES

Late in 1984, New York city and New Jersey state police unearthed one of the first in what will undoubtedly be a long line of personal-computer-aided crimes, a computer-managed gambling ring.

Captain Brian F. Hillen says, "This is the first time

we have found a computer being used like this in New York City." An Apple II, an Apple III, and an IBM PC allegedly served as office equipment for the bookmakers in the ring.

Although they arrested 23 people and confiscated $30,000 in cash, the police seem to be fascinated most by the way the computers were being used. At this writing, the case was still being prepared for a grand-jury trial, so little information was available. New York City Deputy Inspector Joseph DePierro did say that the computers apparently calculated betting odds and helped the bookmakers "lay off bets"—balance bets, that is, so that the bookmakers wouldn't be

wiped out by a big winner.

No clues yet on what kind of software the bookmakers used, but the police say they have confiscated about 90 floppy disks' worth of data. They will treat these disks the same as paper gambling records.

Now that computers are penetrating every level of society, it's a sure bet that you'll see more such innovative uses of Apples. Says DePierro, "I suspect that it's only going to increase in numbers."

WHO WILL WATCH THE DATA WATCHMEN?

Computers have proven themselves staunch fighters in the battle to weed out criminals—they run data matches to prevent welfare and insurance fraud, and they help police officers pair a wrongdoer with his or her record, based on the driver's license number.

Have we wondered enough where they get all that data, though? Do we know how many public or private agencies have access to information we thought confidential, such as bank balances, test scores, and medical records?

Our society's approach to handling sensitive information is changing at its very root, says Gary T. Marx, professor of sociology at the Massachusetts Institute of Technology. In a paper published recently in *American Behavioral Science*, Marx and fellow researcher Nancy Reichman examined the effects of computerized data searches on our society and discovered that many of our habits in dealing with data don't fit technology's new capabilities.

"Our society's attitudes toward privacy and anonymity rested on our inability to aggregate data," says Marx, but now that computers permit us to gather and manipulate tremendous amounts of material, we haven't modified our methods to properly use this wealth of information.

For instance, if you think you're flooded with memos

and paper at your job, consider the lot of police officers, who, thanks to computers, have more information about certain kinds of wrongdoers than they can ever act on. Marx says we need to ask ourselves, "Should you take steps to discover violators if you can't take steps to punish them?" If the decision to pursue a case isn't a matter of law but of the enforcer's whim in selecting one of many possible cases, bribery and corruption can enter the gap. The flood of information may result in a lack of respect for law-enforcement agencies.

At least 40 federal agencies now use computer matching to conduct investigations, often without our knowledge. Yet another problem with computer matching is that for large databases, matching must take into account such a wide array of information that important information is left out of the search. Marx mentions a case in Massachusetts in which a woman lost her welfare benefits because a computer check didn't show that the $5000 in her bank account was legally held in trust for her funeral expenses. (Massachusetts has since changed its laws to prevent similar incidents.)

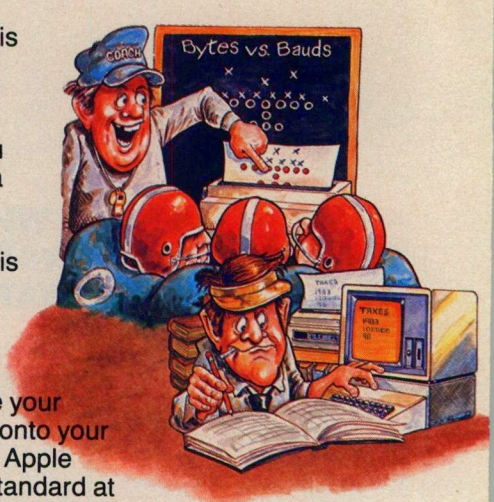
Marx thinks legislation is only a partial solution, however. Administrators should realize they're being confronted with entirely new questions, he says. How will you handle new data? Which outside groups will have access to it? Does your data-handling routine give technically knowledgeable violators a free ride into your system? The irony of our newfound capabilities for handling data is that gaining one kind of security has threatened our security in other areas. +

CRISTINE MORTENSEN

We've Provided Innovation And Excellence To 170,000 Apple® Users.

Three years ago Orange Micro set the standard for parallel printer interfaces with the Grappler+. Now a new standard has been set for Apple II's and the Imagewriter Printer. The new Serial Grappler brings all the power, features and compatibility of the Grappler+ to Apple's innovative serial printer. Over 30 built-in Grappler commands let you control screen printouts without software. The Serial Grappler will work with all programs written for the Grappler+. The newest innovation in the Serial Grappler is the Bufferpak™ expansion module, a printer buffer that clips right onto the Serial Grappler. No extra slots, no boxes or cables. You just plug it on. Adding the power of buffering has never been so easy. Pick up a Serial Grappler today and see how far your Imagewriter can go.

SERIAL Grappler® Printer Interface



The Bufferboard is the original buffer upgrade for parallel printer interfaces. Buffering saves you time by storing data being sent to your printer. That means that your computer is free to let you work, even while your printer prints.

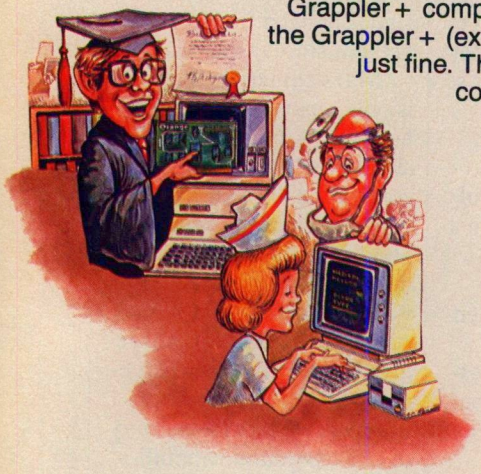
The Bufferboard easily installs inside your Apple and "docks" onto your Grappler, Epson, or Apple parallel interface. Standard at 16K, it expands to either 32K or 64K. At capacity, the Bufferboard provides 20 pages of text memory.

Just plug the Bufferboard into any available slot, attach it to your printer interface, and you're set. No extra power supplies, no clumsy boxes and cables. The Bufferboard is the easiest and most economical way for you to add printer buffering.

Bufferboard™ For Apples and Printers

Orange™ Printer Interface

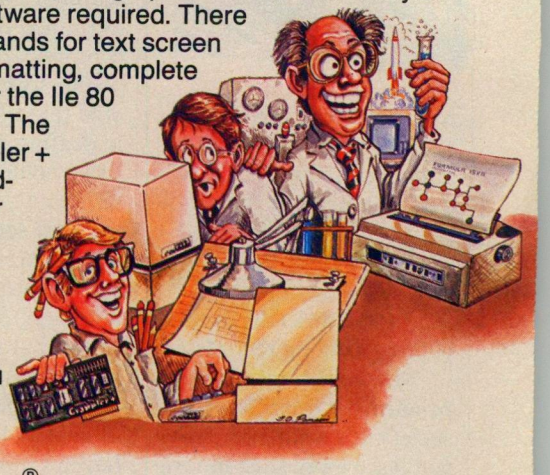
If your focus is on accounting, word processing or other text-only applications, then the Orange Interface is for you. The Orange Interface is a low priced, text specific interface. Sure, programs can send graphics through the card, but the 15 built-in commands are for text screen dumps and formatting. These features include a special screen dump for Apple's IIe 80 column screen. The Orange Interface is engineered to be Grappler+ compatible, so software for the Grappler+ (except graphics) will run just fine. The Orange Interface is compatible with most all parallel printers and comes complete with a cable and documentation. Its quality is assured by Orange Micro's 1-year warranty. Why settle for a "dumb" card when you can have an Orange Interface?



Grappler® + Printer Interface Series

When Apple owners talk about intelligent printer interfaces, they talk about the Grappler+. With over 150,000 units sold, the Grappler+ series has become the most widely recognized product of its kind.

The parallel Grappler+ comes with or without buffering, and offers a special version for Dataproducts color printers. With over 27 built-in commands, the Grappler+ lets you print graphics with a wide array of options. No software required. There are also commands for text screen dumps and formatting, complete with support for the IIe 80 column screen. The Buffered Grappler+ adds an expandable print buffer to save time while your printer prints. When you choose a Grappler+, you interface with intelligence.



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CIRCLE 252 ON READER SERVICE CARD A+

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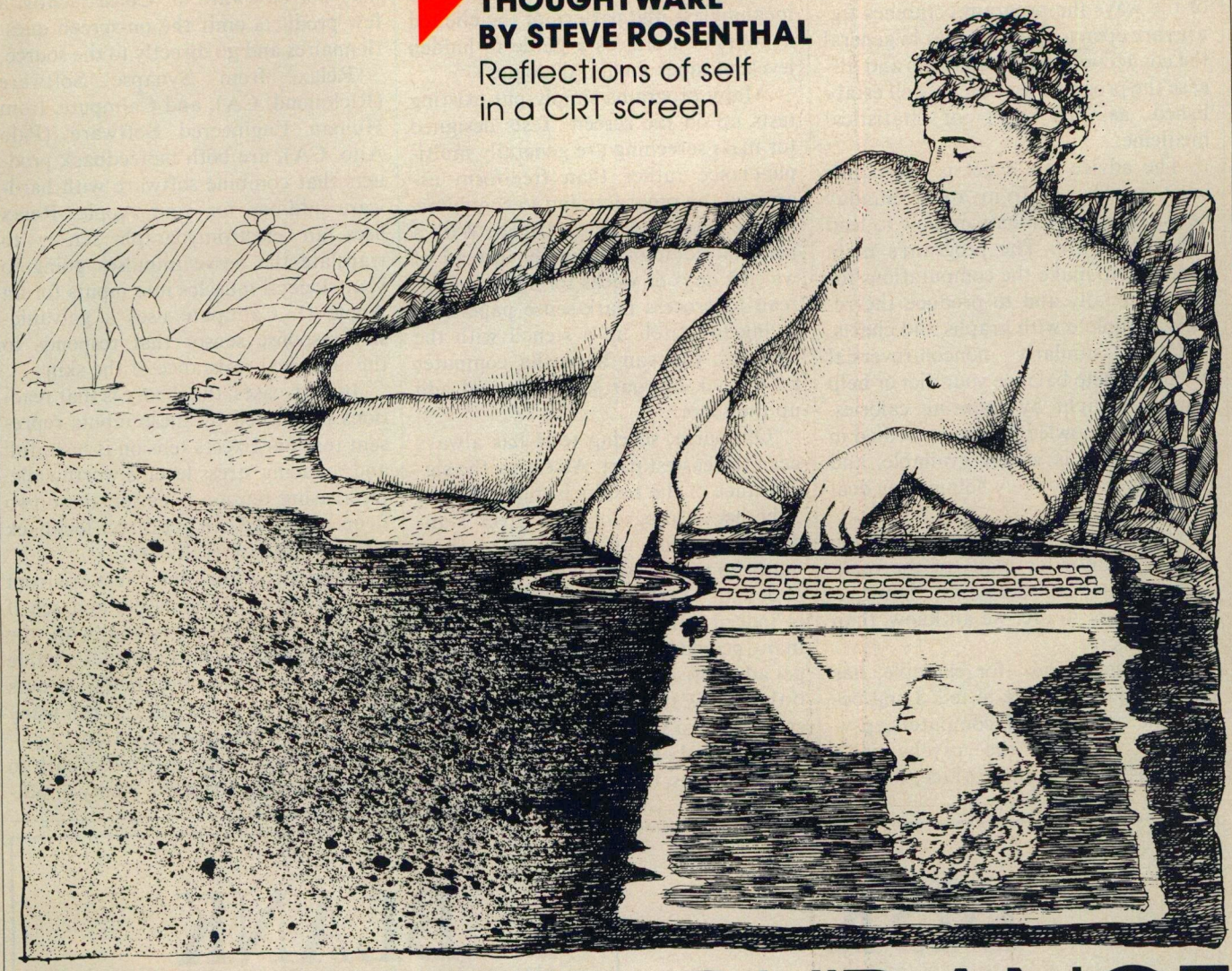
THOUGHTWARE
BY STEVE ROSENTHAL
Reflections of self
in a CRT screen



COMPUTER GUIDANCE

Personal computers unquestionably can assist the mind and the body, but can they help the soul? Some people find ridiculous the whole notion that a personal computer can help us deal with emotions, teach skills, or facilitate insights. Yet, even though an Apple or similar machine has no personal identity of its own, with the right hardware or software it can be a teacher, adviser, and trainer. In fact, some people say the computer can at times be a better counselor, friend, or instructor than another human can.

Of these roles, that of instructor is the most firmly established. Personal computers have clearly made a place for themselves in formal education. Most schools now offer students a chance to have time working with computers (a majority of which are Apples), and a growing number of colleges regard the use of a personal computer as a necessary part of becoming an educated person.

The Problems of Daily Life

Now you can choose from a growing number of software packages that claim to provide similar utility in showing you how to deal more effectively with the problems of everyday life. Some of the programs are definitely of value, some are questionable, and many are good mostly for a laugh. Just as when you tell your problems to other people, you have to discover whose advice is worthwhile and when to accept or ignore it.

Some people say the computer can at times be a better counselor, friend, or instructor than another human can.

At one end of the spectrum of self-help aids on a disk, you'll find a number of programs that deal primarily with numbers and, at least statistically, deal strictly with the facts.

For example, Life-Style Analyzer, from Eagle Software (Wayne, PA), compares your habits against those in a database collected by the U.S. Public Health Service. Based on your health habits, medical history, and family background, the program tells you what that profile indicates about your future health.

In this case, the statistical correlations the program relies on are a matter of public record, representing the best

CATHY HECK

evidence of a large number of epidemiologists over a number of years. Some of the ways the program combines figures are open to question, but in general the connections between habits and disease the program uses are as well established as any part of statistical medicine.

The advice you'll get is much like what you'd get from most Sunday newspaper supplements on how to lead a healthier life. The program's main service is to make the computations for you personally and to produce the results, complete with graphs and charts.

Other similarly noncontroversial programs help balance your diet or help you lose weight by counting calories. Again, the knowledge base embodied in the programs is widely available, and the computer is merely helping you deal with the numbers.

Stark facts don't always provide much guidance for many of the more crucial personal decisions, however. There's more to life, we all know, than just numbers.

The unconscious, for example, has its own irrational tale to tell. Long before the existence of computers, psychologists probed the psyche with questions that, on the surface, did not always seem connected or relevant. Although all or some questions may be meaningless, the pattern of the elicited answers is useful as a guide to hidden levels of inner mental dialogue.

Many programs simply put existing tests up on the screen. Tests designed for mass screening are generally multiple-choice rather than free-form exams, so the programming to computerize the process is almost trivial. With a personal computer, though, instead of waiting days or weeks for a service bureau to process mark-sense papers, or trying to match up a stencil with the answers, you can have the computer keep track of your selections and add up the score.

Of course, scoring tests has always been the easiest part. Assessing the significance of the results is much harder. Whether a program that gives standardized advice on the basis of standardized tests is worthwhile is a matter of debate. On the other hand, if the test is indeed valid, it may be easier for many people to tell their secrets to, and get advice from, a machine—especially if they know that they can turn it off or erase the disks any time they choose.

Only the Body Knows

Our bodies, though, have their secret whisperings that even our unconscious may not be aware of. Consequently, a few products omit the on-screen questionnaires and go directly to the source.

Relax, from Synapse Software (Richmond, CA), and Calmpute, from Human Engineered Software (Palo Alto, CA), are both biofeedback products that combine software with hardware add-ons for your Apple. Relax uses an electromyograph sensor to translate the nerve impulses going to your skeletal muscles into inputs for an Apple II. Calmpute uses a galvanic-skin-response sensor that responds to the electrical resistance of the skin.

In both cases, the theory is that reactions monitored by these inputs represent tension. Excess tension is harmful, and reducing stress level is worthwhile. Decreasing tension is easier, these two firms say, if we can get direct feedback on how tense we really are.

These programs don't just confront you with your stress levels and see if you'll change them. Along with the hardware and software, you get a guide to stress reduction and, if that proves too abstract, a game you can run using your stress levels like a joystick.

If you find games a painless path to self-knowledge, there are plenty of oth-

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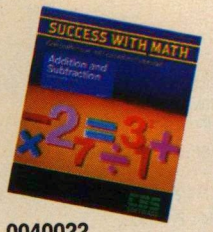
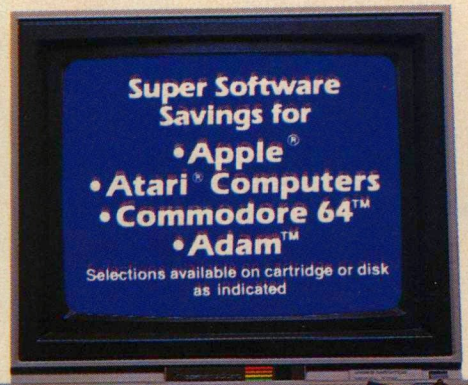


0040022
Addition/Subtraction
0041012
Multiplication/Division
Both available for C-64, Atari H.C. and Apple: *disk.*

8035022
Zaxxon
Adam, C-64: *cart;* Atari H.C.: *disk and cart;* Apple: *disk.*

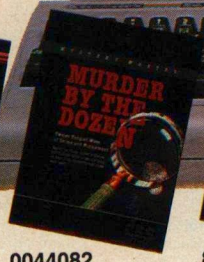


8172052
Master Type
C-64, Atari H.C.: *disk and cart;* Apple: *disk.*

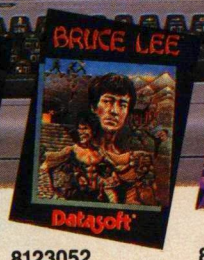
8230052
Run For The Money
C-64, Atari H.C. and Apple: *disk.*

8122062
Pitfall II
Adam, Atari H.C.: *cart;* C-64: *disk and cart.*

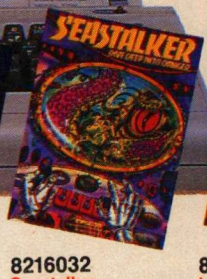
8100022
Choplifter
C-64, Atari H.C.: *disk and cart;* Apple: *disk.*



0044082
Murder By The Dozen
C-64, Apple: *disk.*

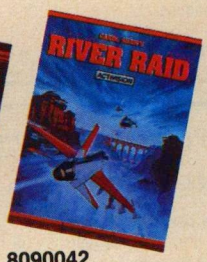


8123052
Bruce Lee
C-64, Atari H.C. and Apple: *disk.*

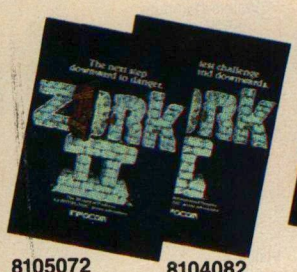


8216032
Seastalker
C-64, Atari H.C. and Apple: *disk.*

8101012
Lode Runner
C-64, Atari H.C.: *disk and cart;* Apple: *disk.*



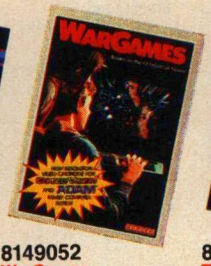
8090042
River Raid
C-64: *disk and cart;* Atari H.C., Adam: *cart.*



8105072
Zork II
Atari H.C. and Apple: *disk.*

8104082
Zork I
Atari H.C. and Apple: *disk.*

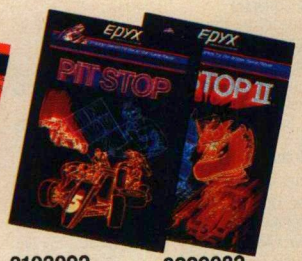
8150012
Summer Games
C-64, Atari H.C. and Apple: *disk.*



8149052
WarGames
Adam: *cart.*

8102002
Temple of Apshai
C-64, Atari H.C. and Apple: *disk.*

8215042
Beach-Head
C-64, Atari H.C.: *disk.*



8103092
Pitstop
C-64, Atari H.C.: *cart.*

8229082
Pitstop II
C-64, Atari H.C. and Apple: *disk.*

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er possibilities. I've only seen the ad and not the software, so far, but Millenium claims that its package called The Brain Game lets you find out "how smart your computer thinks you are . . . and get smarter while you do it." The purpose of the program, the company points out, is to test "your hardware and software," meaning your own mental capabilities, not your computer's.

Enlightenment (or at least self-improvement) may be worthwhile for its own sake, but many of us want more direct help in order to get by in this world. Another whole class of programs promises to improve your life by improving your work habits.

Human Edge Software has an extensive set of these attitude-honing programs for the work environment, all of which the company is now also releasing in Macintosh versions (see page 24 for more details).

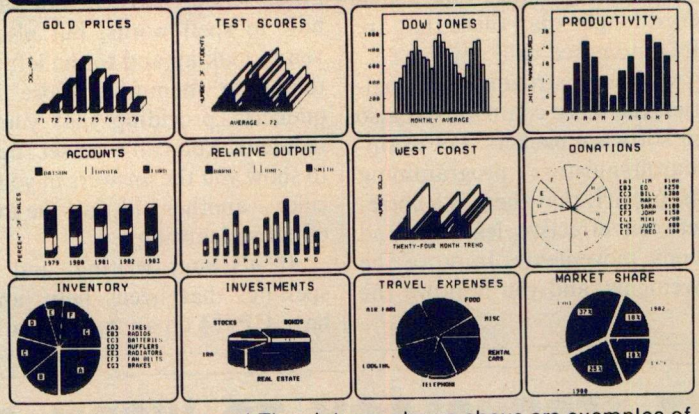
Some people swear by these programs. The analyses and strategies that are produced in response to your inputs are far beyond the fortune-cookie level—they do take into account a great deal of experience in applied psychology. Other people find that the suggestions they get are often obvious, and the program merely rephrases the conventional advice you might get a lot more cheaply from any of dozens of popular books on business practices.

Human Edge Software also has a program for use at home, called Mind Prober, that promises to tell you about the inner thoughts of your personal acquaintances. Some people feel that using such a program is a violation of personal privacy, and well it might be. I'm boycotting it anyway, though, because the advertising campaign appeals to the sleazier side of human nature.

Taking more of the high road, other firms are applying psychological theories to help accelerate skills training. Every other educational software package for kids, it seems, has a psychologist listed among the developers and includes an explanation of how the program uses such knowledge to make the teaching process faster and more effective.

Whether it's Stickybear Shapes or Run for the Money, programs for kids provide reinforcement for right answers with musical hurrahs and on-screen fireworks. If mastery of the skill at hand proves insufficient as a motivator, providing a little excitement and motion at least keeps you awake. And if you've watched kids use programs such

MasterChart!



Don't pay more for less! The pictures shown above are examples of charts created with MasterChart!, perhaps the most powerful and friendly Apple II chart program on the market. Within seconds, keyboard-entered data can be converted into picture-perfect pie or bar charts, in 26 user-selectable styles, automatically scaled and labelled, and in color or black and white. And if you want to customize your charts by adding extra artwork or text, or display them in a slide show, MasterChart! comes with these valuable extras . . . . .

A **slide projector,** or orchestrating automated, stand-alone screen presentations of a series of charts, timed and sequenced by the user. This program alone is worth the cost of the disk. It can be used with any graphics files created with any program.

A **graphics editor,** for alteration and embellishment of charts. Besides standard point-by-point sketching, built-in structures permit push-button creation of cirlces, rectangles, lines, shape-table shapes, and exotic woven plaid patterns. If you wish to add clarifying text to the charts, you may type on the screen in several different letter font styles. For the artist, the graphics editor can also be used to sketch any imaginable scene from, scratch.

A **shape table editor,** for creating special shapes for your charts. These shapes can also be used for animation in your programs! A sample animation program shows how to do it.

MasterChart! includes a screen-dump program for printing your charts on paper. MasterChart- is more! Just read what these people have to say about it . . .

"I noticed the advertisements for Spectral Graphics' Master Chart! program and figured that, with a money-back guarantee, I would try it. Boy, am I glad I did! This is a fantastic program. You can master its many varied capabilities in less time that it would take to describe them. I would recommend it to everyone, even if you have absolutely no need for a graphing program. It's just fun to play with." **S.A. Smith, San Bernadino, Calif. . . letter to SOFTALK, June, 1984, page 14.**

"The software does much more than the advertisement suggests. Without question, this is among the best buys in software that I have ever come across, and certainly among the best written. It is extraordinarily easy to use, very well thought out, and priced to kill your competition (which I wish you every success in doing)." **Anthony J. Scriffignano, North Caldwell, New Jersey.**

"I have long been distressed by the lack of software available in the scientificlacademic community. At last there is a simple yet robust graphics program applicable for our purposes: MasterChart!, by Spectral Graphics Software. Business folks and scientists alike will really appreciate how user-friendly it is; I was able to produce my first three-dimensional, multi-colored, labeled bar graph within five minutes of booting the disk--without reading my documentation. I would have had to pay a scientific illustrator much more than the whole program costs just to produce that one graph . . . . you can't do without this gem." **John B. Iverson, Richmond, Indiana . . . letter to SOFTALK, April, 1984, page 23.**

ONLY $29.95 Apple II+/IIe/IIc. Satisfaction guarantee or your money back (really!). Send a check or purchase order to **SPECTRAL GRAPHICS SOFTWARE,** 6333 Pacific Avenue, Suite 256, Stockton, California 95207. Or call (209) 474-1212 for COD orders and dealer inquires. MasterChart! is not yet sold in most stores. All orders are shipped immediately and are in your hands within three days.

CIRCLE 407 ON READER SERVICE CARD

as these (or if you're enough of a kid to try them yourself), you know that programs with good graphics and sound hold interest longer than those that are essentially automated drill cards.

Along with mainstream psychological theories, the more controversial also have their software backers. For example, neurolinguistic programming maintains, in part, that there is a correlation between effective learning and certain body movements. Improve the body movements, and you improve the learning.

If you want to see for yourself, try Spelling Strategy. This program for grade-school learners not only shows how to spell words, but also reminds you to look up and to the left as you attempt to memorize those letter sequences (providing that you're right-handed). You can even set the program to show you the answers in your favorite color—another aid, say the authors, to effective learning.

If it's your writing, and not your spelling, that needs help, and if you have CP/M on an Apple, you can have Punctuation and Style or Grammatik check out your work. These programs are grammar and phrase checkers that look through text files to find such problems as punctuation errors, trite phrases, and sexist terms. The idea behind the programs is that running these programs doesn't only help you spot problems, but also gradually teaches you to make fewer errors.

One of the big attractions of the programs, most people say, is the fact that they are just programs—many people find themselves to be more comfortable having their computer check through their work, rather than having a coworker or family member do it.

That feeling of privacy of exchange between you and your computer is one of the main attractions psychological programs hold for most people.

It's a definite factor in the popularity of the Eliza program and its descendants. This program simulates the questioning of a nondirective therapist, using words and phrases from your answers in its subsequent questions. Joseph Weizenbaum originally wrote Eliza as an exercise to show how computers could *not* do the job of human therapists. As he reports in his book *Computer Power and Human Reason*, he was astonished to find that some people actually preferred interacting with the machine, even to the point of treating their dialogues with it as private and confidential.

The power of a computer to draw in those individuals who have trouble talking with other people is one of the unanticipated side-benefits of the whole personal-computer phenomenon. Even when it's running software that has nothing explicitly to do with psychological well-being, the computer, because of its interactive nature, can help bring out a reaction in people who would otherwise feel cut off from the world. Unfortunately, the process also works the other way around—some people use the computer as an escape that frees them from the necessity of dealing with people, who can be less predictable than software or hardware.

Truth and wisdom, it appears, still remain elusive. The tool can be used for both good and evil. Isn't that, after all, the lesson we were supposed to learn from the original apple? ✚

Steve Rosenthal is a writer and lexicographer who tries to maintain a perspective on other joys and problems in the world besides those involving personal computers.

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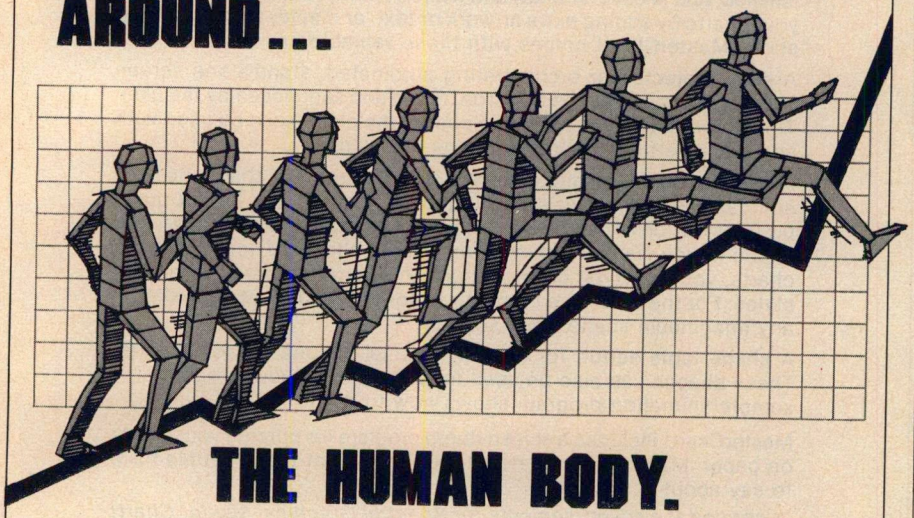

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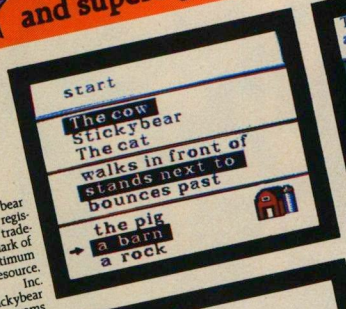

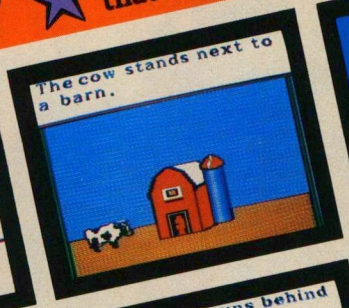

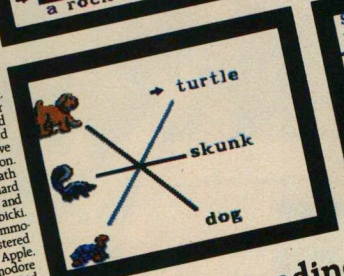

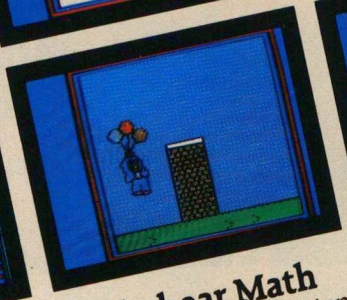

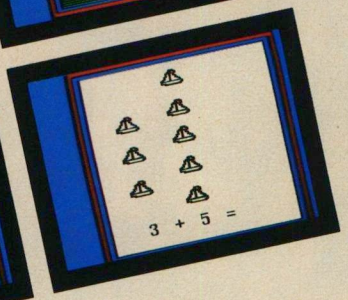

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A/M92A1

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SELF-HELP

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BY STEVE ROSENTHAL

A short glossary

ASSESS
To gather evidence about the current state of a person or situation. Many self-help programs attempt to assess characteristics of the user or another person who is the object of inquiry. Most state laws, however, permit only licensed medical personnel to diagnose (state the cause of a problem).

AUTONOMIC NERVOUS SYSTEM
The part of our nervous system that regulates bodily processes beyond normal conscious control, such as heartbeat, blood pressure, and so on. Clear evidence shows that, with the proper training, people can bring many of these processes under conscious control.

CONFIDENCE LEVEL
The chance that a result may be due to random fluctuation rather than due to a significant difference. The value is usually expressed either as a percentage or as a decimal fraction. In many psychological tests, a value of less than 5% is considered significant, meaning that there may be as much as 1 chance in 20 that the results are due merely to random variations.

CORRELATION
The likelihood of one particular event or state, given the occurrence of a second. Correlation between two or more events does not necessarily imply causation. Sometimes, known or unknown external factors may be the cause of all the observed events. For example, the fact that most computer users are male does not mean that computers cause people to become male or that being male causes people to spend time with computers. Most present psychological software attempts to find factors known to be correlated with other states, but does not have the depth or ability to figure out causation.

ELECTROMYOGRAPH
An instrument that records electrical impulses in muscles, or the record produced by such an instrument. It is useful in studies of specific muscles, but it can also measure general tension levels.

FACE VALIDITY
The extent to which a test or assessment seems to directly relate to the skill or state it claims to measure. For example, a questionnaire on caloric intake and exercise would have high face validity for predicting body weight. Because of the complexity of the human psyche, a test or question that asks about one subject may prove to be a good predictor of some seemingly unrelated topic, thus having high accuracy and validity but low face validity.

GALVANIC SKIN RESPONSE (GSR)
The change in electrical characteristics of the skin due to stress or other internal changes. The GSR is one of the principal items some tests of relaxation—and lie-detector tests—measure. Another term for the same phenomenon is the electrodermal response.

ISOLATED
Said of electrodes for measuring physiological responses: hooked up so no path exists between the electrical supply and the electrode. Electrodes hooked to humans and a computer should always be isolated. One common method is to use a battery-powered circuit for the electrode, connecting it to the Apple with an optoisolator, which transmits the signal from the electrode to the Apple via a beam of light but blocks any current flow the other way.

ITEM ANALYSIS
Picking out which questions or tests in a larger set are most useful for indicating the property of interest. Most standardized tests are the result of a process of winnowing out a small number of effective questions from a much larger set of initial candidates. Various statistical programs, some of which are available for the Apple, can aid in this procedure.

NONDIRECTIVE
Questioning that does not define the expected answer as part of the question. The Eliza psychological program, for example, attempts to be as nondirective as possible, letting users determine the content and tone of the discussion.

OPERANT CONDITIONING
A training method based on the supposition that responses that are directly rewarded will increase in frequency and that those that are not rewarded or are punished will become more rare. In its primitive form, this method is widely used to train animals, but its effectiveness for teaching complex concepts to humans is in question. Some simple educational software uses principles of operant conditioning, rewarding each correct answer with praise, a tune, or a flashy picture.

PRECISION
The sharpness of the distinctions expressed in a particular value or classification. For example, 1.05 is a more precise value than 1, since the first value implies that the results are known to the nearest hundredth.

RELIABILITY
Said of a psychological or physiological test or assessment tool: the extent to which it consistently produces the correct indications (or at least consistent indications—a test can be reliable but inaccurate).

SYNESTHESIA
A combining of perceptions from various senses. One of the goals of many newer software packages is to combine graphics, text, and sometimes music to involve users more fully than would be possible in a less interactive medium.

VALIDITY
The extent to which results or conclusions are true indicators of the quality they claim to predict. For example, if a self-assessment package claims to tell whether you're outgoing, it is highly valid if its result agrees with what an impartial observer would conclude. A test can be reliable (producing the same conclusion for the same inputs) but still not valid.

WIN-WIN
Situations in which both (or all) parties gain.

ZERO-SUM
Said of situations where one party must lose if another is to win. The object of many psychological and management programs is to help you find ways to turn apparent zero-sum situations into win-win situations. +

BECKER BISHOP PHOTOGRAPHY

SELF-HELP SOFTWARE
PART ONE
BY VANESSA SCHNATMEIER

THE APPLE Cons

Within ten years the new personnel consultant at your company may be a computer.

Today's crop of business software can set up accounts for everything, spread magnificent spreadsheets, crack the communications barrier, and process more words than you can shake a chip at. Until recently, though, relatively little software helped managers grapple with the really tough aspect of their jobs—managing people. That idea's time has almost come.

Software for managers is still mighty thin on the ground. This situation is partly a result of the youth of the microcomputer industry as a whole. It's also a sign that software houses are reluctant to tackle problems more difficult than number crunching, for which computers are ideal. Now that the market is glutted with spreadsheets and database managers, however, firms are turning to the ripening field of computerized training and adult-education packages.

A study conducted by Wilson Learning Corporation in New York showed that of an estimated $1 billion spent on management training every year in the United States, only 5% goes for self-instruction courses, reports the *Wall Street Journal*. But that same study indicated that within five years, that 5% will balloon to 50%, and most of that increase will come from courses that use computers. (Coincidentally, Wilson Learning is now developing a computer-based management-training package.)

At this writing, only a handful of companies are producing management self-help software. These programs differ widely in purpose and tone, and

A NEW REALM OF BUSINESS SOFTWARE: MANAGEMENT TRAINING

ultant

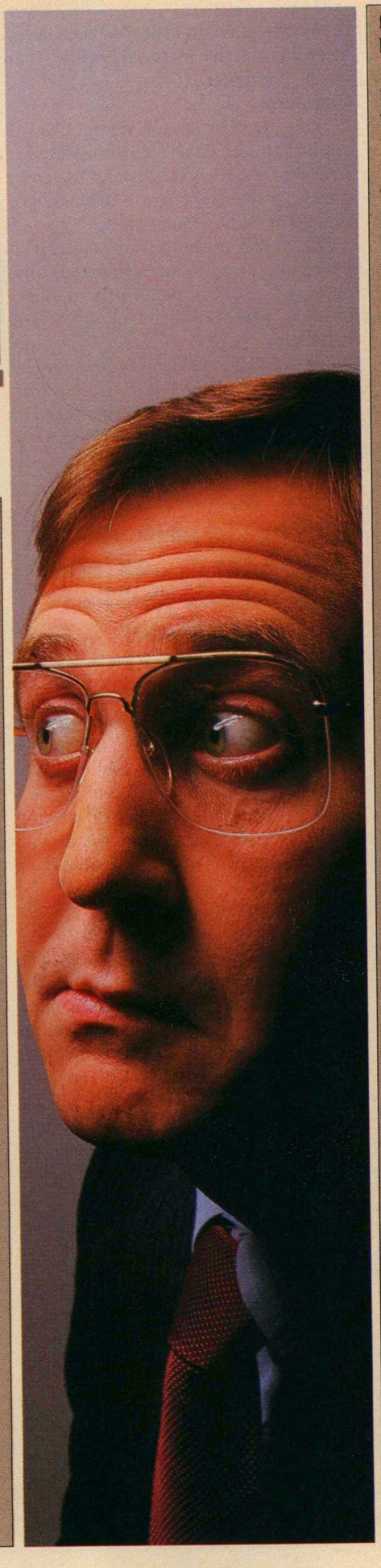
their authors hail from widely different backgrounds. Some are offshoots of preexisting management-training seminars, rechoreographed to fit on a floppy disk. Others derive from the desire of experts to translate the wisdom of their field into a marketable package. Some programs are innovative; others are rehashes. All of them stand to do well in the market, though, simply because so little is available now.

Low-Cost Consultant

The chief advantage of computer-aided self-help programs is their cost, when compared with having to learn similar material from a consultant or seminar. Many of you readers will have noted the $800-and-above price tag on two- and three-day seminars. Contrast the typical cost of a computerized self-help program, which ranges between $200 and $500. Along with the lower cost, buyers receive an infinitely patient instructor, learning that students can personally pace, and the potential to tailor the learning to their particular situations.

Apple computers retain a slight edge over the IBM Personal Computer in this market because of Apple's overwhelming share of the education field. This lead will continue for some time, especially as companies write programs for the Macintosh.

The programs currently available for Apple computers divide into two basic types (with some overlap between them): expert systems, in which the user enters data and gets results or direction without much interaction—a kind of received wisdom; and expert processes, where the user is led down a path that may have been carved out by experts but whose ultimate goal is defined by the individual at the keyboard.



Human Edge Software

One of the first firms to enter the field of self-help software for managers was the Human Edge Software Corporation in Palo Alto, California. Its founder, Jim Johnson, possesses a set of qualifications that prepared him perfectly to push computerized self-help—a doctorate in clinical psychology and a stint as a computer salesman. Before founding Human Edge, Johnson had created another company, called Psych Systems, which specialized in computer test interpretations for psychiatrists.

Human Edge publishes a series of managerial software: The Sales Edge, The Communication Edge, The Negotiation Edge, and The Management Edge. All of these programs rely on how users (managers, negotiators, or salespeople) rank others (employees, other negotiators, or sales prospects) on a list of personality descriptors. Depending on how the users characterize other people they work with, the program emits a set of instructions for dealing with particular individuals.

Now that the market is gutted with spreadsheets and database managers, firms are turning to the ripening field of computerized training.

Users get a chance to rank themselves, too, though with a series of statements about themselves rather than single-word descriptions. This is not an interactive method of looking at the situation (a partial relief to those of us who would be quite happy never to see or hear the buzzword *interactive* again), but a prescriptive method—an expert system, if you will.

Experience in Software

Another approach to managers' self-help exists in a program called The Art of Negotiation, by Experience in Software, Berkeley, California. Unlike the Human Edge programs, The Art of Negotiation does not give users hard-and-fast answers—users must find those answers by themselves. This program was designed to be used in any kind of negotiation—from asking for a

raise, to settling a corporate merger, to negotiating who will do the housework.

Instead of presenting you with ready-made answers to negotiating questions, this package makes you work for them through the lengthy but crucial process of stating your issues and objectives and then clarifying and rephrasing them in more neutral language. Eventually you understand better what your "opponent" might think, as well as being clearer about your own position. The program works toward a situation where, with luck, both sides of a negotiation can somehow win.

Company president Roy Nierenberg says of The Art of Negotiation, "It's a framework to focus your thoughts and help you attack a specific problem. I dreamt of software that could help you ponder . . . extend your capabilities and your imagination."

Thoughtware

Thoughtware is the other old-timer in the self-help field. This company (based in Coconut Grove, Florida), capitalizing on experience in conducting management-training seminars, has produced 11 self-help packages. At first, says president Jack Levine, Thoughtware was content to produce software that resembled classroom material. Eventually, though, as the company became more comfortable with computer-aided training, it became more innovative, reorienting its work toward helping managers put together a "script" (i.e., pattern or template) that, with the input different situations require, helps them work through a variety of problems.

Thoughtware's array of products—Assessing Personal Management Skills, Evaluating Organizational Effectiveness, Understanding Personal Interactive Style, Leading Effectively, Managing Time Effectively, and Motivating to Achieve Results—covers a broad range of management skills. A new offering, Managing by Exception, leaves managers alone except when the natural flow of things—the number of sales calls or the time spent dealing with cases—is somehow disrupted; then the system is triggered to send a memo or otherwise alert you that everything is not as it should be.

Thoughtware's primary targets are first-time managers, supervisors without experience who want to get their feet wet without dousing the employees. Levine says his company's products place a higher value on graphics than many others do, in order to focus users' attention on the material, rather than on the computer.

Concourse

This firm, a spinoff from Control Data that used to be a custom-software house for the PLATO system, has come up with a special program to teach participative management skills.

"The old authoritarian method is not the best way to manage people anymore," says Maureen Pittman, Concourse's vice president of sales and marketing.

The Participative Management Skills program has five modules: a diagnostic module to determine whether your company already has some form of participative management; an analysis of your personal power within the company and a question-and-answer section to help you determine your strengths; and modules on team communication, consensus, and managing conflict.

'I dreamt of software that could help you ponder . . . extend your capabilities and your imagination.'

Helping Yourself to Self-Help

We got a chance to peek at two of the products mentioned above, The Management Edge and The Art of Negotiation. Both come in handy for managers, although your personal preference would undoubtedly hinge on your management style. If you envision yourself as either a wheeler-dealer or a peacemaker, The Art of Negotiation would probably suit you. This program bends over backwards to ensure that you understand what the other side wants; in fact, both parties in a negotiation can use it at once. Lawyers, real-estate agents, educators, and insurance agents can gain invaluable practice listening to the other side of the story as, simultaneously, they bring their own goals forward. This program, clearly documented and easy for novices to operate, works equally well in solving interpersonal disputes. (The author attests to its facility in ironing out a major dispute over household chores.)

For managers who work with many people or have to do a great deal of "psyching out" of employees or coworkers, The Management Edge offers hours of fascination. Be sure you understand the meaning of all the one-word personality descriptors before you make your final decision—*sensitive*, for instance, may mean "sensitive of surroundings" or "aesthetically aware" to you, but to the program it means "touchy, sensitive to criticism." The program has several internal modules on subjects ranging from how to improve communications to firing recalcitrant employees. You receive a series of paragraphs via your printer (unfortunately, via your printer only, not on the screen) explaining how you as a manager can best deal with the employee whose qualities you have painstakingly entered.

An instructive exercise is to rate yourself as an employee—you may not be the same affable old soul you thought you were! The *Wall Street Journal* quotes Victor Sloan, president of Victor Aviation Services in Palo Alto, California, who used this program to decide how to motivate an employee he thought needed to work more with others. No, admonished the program, let him work alone. When Sloan followed that advice, the employee's productivity rose 30%.

Why So Few?

Many of the companies I contacted for this article expressed mild surprise that so few firms had entered the market. Some attributed the gap to suspicion of computer-based training when compared to seminars and in-person instruction. "Ideally, of course, training should have some of both (computerized courses and personal instruction) for maximum effectiveness," says Pittman. Some in-house trainers may discourage computer-based training on the grounds that it could eventually ease them out of their jobs.

"Inspiration comes better from humans," admits Thoughtware's Levine, although he adds that these computerized self-help packages are still exciting on their own because of their novelty.

Another more down-to-earth reason for the small number of firms in this market is the lack, until recently, of a widespread installed base for such programs. It comes as no surprise that the oldest of the self-help-software firms started business in early 1983. As programs to help managers help themselves begin to be in demand, companies may appear as though out of thin air.

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As Levine says, "This isn't just a bright idea." It's an idea that may help you decide how you want to work with your employees on a day-to-day basis. Get to know your computer soon, before it learns to manage without you. ✚

Vanessa Schnatmeier is a free-lance writer who is particularly interested in the human side of computers.

▸ PRODUCT INFORMATION

Participative Management Skills
Concourse
2626 East 82nd Street
Suite 215
Minneapolis, MN 55420
(612) 854-8848
List Price: $295 (five modules)
Requires: Apple II, II Plus, or IIe; 128K RAM
CIRCLE 535 ON READER SERVICE CARD

Art of Negotiating
Experience in Software, Inc.
2039 Shattuck Avenue
Suite 401
Berkeley, CA 94704
(415) 644-0694
List Price: $495 (includes program disk and backup, users' guide, and two books by Gerard I. Nierenberg: *Fundamentals of Negotiating* and *Art of Negotiating Work Text*)
CIRCLE 536 ON READER SERVICE CARD

Four management-training programs
Human Edge Software Corporation
2445 Faber Place
Palo Alto, CA 94303
(415) 493-1593
List Price: The Sales Edge, $250; The Communication Edge, $195; The Negotiation Edge, $295; The Management Edge, $250
Requires: Apple II, II Plus, IIe, IIc, III in Emulation mode, or Macintosh; 64K RAM
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Seven management-training programs
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Coconut Grove, FL 33133
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SELF-HELP SOFTWARE
PART TWO

BY W. CHARLES DOHERTY AND ROBERT COWART

THE APPLE Therapist

BIOFEEDBACK CAN IMPROVE YOUR DISPOSITION

BECKER BISHOP PHOTOGRAPHY

Stress—it affects virtually everyone to some extent. Left unattended, stress can lead to a plethora of ailments, both emotional and physical. In fact, one American Medical Association report estimates that more than 75% of doctors' visits involve stress-related disorders of one sort or another.

What Is Stress?

Any demand imposed on us, either physically or mentally, constitutes a stress. The manner in which we respond to the stressful situation, however, is what is important. We can either respond creatively and defuse the stress, or we can fall into a cycle of increasing tension and cause a dangerous physiological spiral to develop.

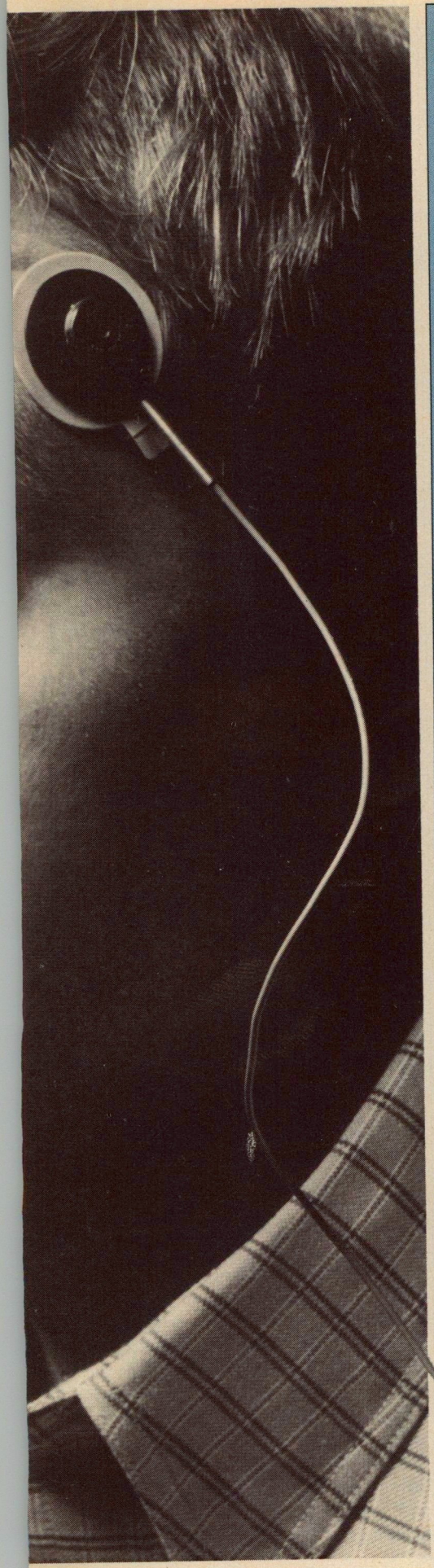
This latter series of events arises from the body's natural, internal response system, designed millions of years ago to help protect us from the hazards of primitive life. Often referred to as the fight-or-flight response, it is actually a series of physiological and psychological changes, some of which occur almost the instant we sense some threat in our environment. Actually, there is nothing inherently wrong about this response, and it is sometimes appropriate—as those who have had to physically protect themselves can attest. The instant infusion of adrenaline during moments of physical danger is actually positive and adaptive behavior.

Problems arise in modern society, though, when this ancient physical stress response is activated at inappropriate times. The solutions to most daily problems hinge on clear verbal negotiation and forethought rather than on muscle tension, sweaty palms, and high blood pressure. If the fight-or-flight response to life continues unabated for any length of time, because of emotional problems or other stresses, undesirable effects often appear. Symptoms can run the gamut from relatively innocuous problems such as nocturnal tooth-grinding (bruxism) to certain forms of fatal cancer, if stress is left unattended.

Concern over the serious nature of many stress-related ailments has led to the acceptance of less-traditional techniques of stress management (such as medication and self-hypnosis) as well as to the development of new modalities for stress control and reduction. Any of the alternatives, if used successfully, are preferable to the use of the typically used prescription drugs, since most of these have undesirable side effects.

Biofeedback is one of the more effective new weapons in the war on stress and one that has gained acceptance throughout the medical community. Recently, this technique has been combined with the power and flexibility of the Apple computer, resulting in a new generation of equipment and software that can help treat and prevent a variety of ailments, from migraine headaches, to anxiety, to gastric ulcers. In addition, these same techniques are proving effective in the treatment of neuromuscular disorders and in the rehabilitation of accident and stroke victims.

Until recently, biofeedback equipment was too complicated and expensive to use at home. Typically, to be trained in the use of the equipment, a patient would visit a biofeedback clinic on a regular basis. Now, low-cost (less than $150) biofeedback systems that



work with the Apple computer are becoming available as well. These systems allow you to benefit from biofeedback techniques in your home as part of an overall stress-management program.

What Is Biofeedback?

Put simply, biofeedback is a method of monitoring and reporting activity in your body that is sometimes too subtle to detect without aid. For example, a person experiencing a headache may be unconsciously tensing neck, jaw, and head muscles. This tension may actually be causing the headache, although the person is not aware of the cause-and-effect relationship and may think the tension is only the result.

A series of sensors placed on the surface of a patient's skin near the muscles in question can trigger either a light or sound reaction from the biofeedback equipment, alerting the patient to moments of tension or relaxation. With practice, the subject begins to see the cause-and-effect relationship between body activities and these reactions and can begin to control them consciously by learning to relax the associated muscles—thus gradually transforming the fight-or-flight response into its opposite, stay-and-play.

Whether your goal is increased relaxation, lower blood pressure, or improved circulation, biofeedback helps you learn the techniques that will help you reach it.

The most common use for biofeedback is in stress management. An effective plan of stress management consists of many elements—counseling, nutrition, and exercise—but a very necessary part of any program is learning to relax. Enter biofeedback.

Patients who have experienced biofeedback therapy often report great progress in a very short time. In the words of one such patient, "Before using biofeedback, I literally didn't know *how* to relax. In just a couple of sessions I learned what would make me calmer, and soon was able to do it without the feedback." People are surprised at how easy it is to relax and control stress once they have a way to monitor their progress.

Types of Biofeedback

The most popular instrument in biofeedback training today is the electromyograph or EMG. This device monitors the minute changes in electrical activity that accompany muscle contraction.

The same system can be used with almost any skeletal muscle, but it is most commonly used with those in the forehead. Not only are the forehead (frontalis) muscles a good barometer of overall body tension, but they are also very close to the skin's surface, making them easy to monitor. A headband equipped with small electrodes detects electrical impulses and feeds them into the EMG device.

In addition to stress and tension-headache management, an EMG is also useful in treating muscle disorders and disorders of the nervous system. A sensor placed against a weak or convulsive muscle can help a patient gain—or regain—control over that area. The system has proved to be a great aid to the recovery of stroke and paralysis victims.

Another popular biofeedback system measures the conductivity of skin—galvanic skin response (GSR)—usually taking the readings from the palm of the hand. As emotional stress increases, so does perspiration, with skin conductivity increasing accordingly. Monitoring the amount of change gives you an accurate indication of emotional state. In fact, polygraph (lie-detector) equipment relies primarily on this system.

Patients who have experienced biofeedback therapy often report great progress in a very short time.

A third technique measures blood flow and dilation of blood vessels, until recently by monitoring temperature at the extremities—easy to do, but difficult to control. A newer, more sophisticated system, called a photoplethsmograph (PPG) uses a small light source and photodetector mounted together. Light shines through the skin and reflects back when it strikes the darker tissue below. The darker the tissue, the more blood it contains and the more light it will reflect. Not only is this device more accurate and easier to use than earlier systems, but it also affords a simple way to measure pulse rate from a fingertip sensor.

This technique has proved very effective in treating and preventing certain types of migraine headaches. Since these headaches are often a result of disturbances in small arteries leading

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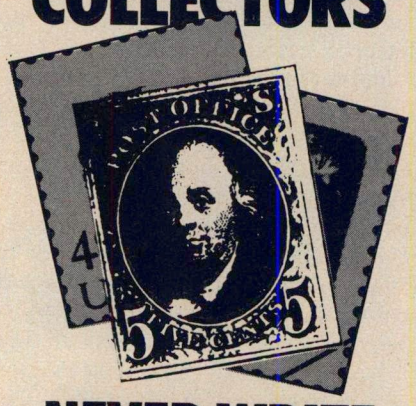

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to the brain, any program that teaches control over the vascular system is a great help. Many patients who have suffered for years from migraines have found relief for the first time, thanks to biofeedback training.

The Apple Connection

Although biofeedback techniques have been in use for more than a decade, they have only recently begun to blossom. Part of the reason is the availability of low-cost, highly flexible computer systems such as the Apple.

The staff at Davicon-Enting, of Brookline, Massachusetts, are pioneers in the field of biofeedback technology and strong supporters of the Apple computer as a part of the complete system. According to company president Kevin Connolly, "The Apple was there from the start, and it remains the most flexible machine on the market for this application. It's inexpensive, very reliable, and easy to use with a variety of input/output devices. In all, [it is] a serious tool that is ideal for our purposes."

Biofeedback techniques have only recently begun to blossom. Part of the reason is the availability of low-cost, highly flexible computer systems such as the Apple.

Connolly goes on, "Designing medical equipment for use in hospitals entails a number of safety considerations as well. The Apple's fully insulated plastic case and switching power supply make it much less of a shock hazard than any other machine."

The complete Medac 2002 system from Davicon-Enting contains two EMG monitors, a GSR monitor, and a PPG unit, along with the necessary sensors and electrodes. The package also includes an Apple IIe computer with a clock card, two disk drives, a color monitor, a graphics printer, and custom-designed software. The entire system is priced in the $10,000 range—no casual investment, but quite reasonable when compared to most medical instruments.

Although Davicon-Enting's system is available only to licensed health-care professionals, several devices exist for using biofeedback in the home. One such system, Relax, from Synapse Software Corporation, retails for $139.95. The Relax system consists of a headband to monitor muscle activity, plus a battery-powered EMG unit that amplifies the signal and feeds it into an Apple II-series computer. The package also includes software routines to convert the signal into graphic images. The system does not provide a way to store these readings, nor does it accept input from muscles other than those of the forehead.

Using Relax was rather interesting and yes, relaxing. Several different graphic screen displays, along with a 25-minute relaxation exercise on cassette tape, added up to one refreshed author, ready for more writing. One of the screens in particular is very soothing, with kaleidoscopic, colored patterns emerging from the center of your monitor and moving outwards. As you relax, the patterns divide and become softer in color; tensing results in constricted, harsher effects. What could be more graphic? Another screen draws a continuous graph of your muscle tension, averaging a selected sampling rate (the number of readings being taken off the headband per second) to smooth out the peaks and valleys.

Generally, biofeedback clinics specializing in stress management work in a similar manner. During the biofeedback session, the patient sits in a comfortable chair, usually in a quiet room. The computer monitor displays a changing graph that corresponds to the patient's level of tension. Often, this graph is accompanied by an audio tone. As the patient relaxes, the tone and graph show the result. If muscles begin to tense, the graph reflects this too—long before it could be detected without the aid of feedback. The results of the session are recorded to disk, creating a record of the patient's progress.

Other treatment programs require a slightly different approach. When biofeedback is used to help stroke and accident victims, sensors are attached directly to the affected area. One successful program has used biofeedback to treat "foot drop," a common after-effect of a stroke. When sensors are placed on the muscles of a patient's lower leg, the faint electrical impulses still present in that area create a graphic image. By watching the graph, the

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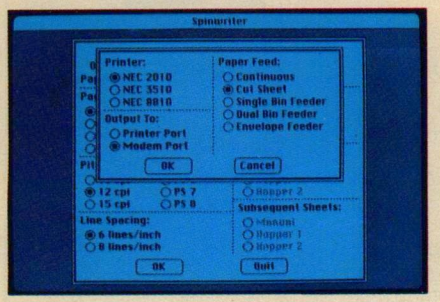

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▸ A PROFESSIONAL VIEW

Professionals who use biofeedback therapy are among the most progressive and open-minded individuals you will find in any health-care field. One such person is Dr. Harold Musiker, head of the Department of Behavioral Medicine at Rhode Island Hospital. Dr. Musiker has been using biofeedback in his practice for more than 12 years and is one of the leading authorities in the field.

According to Dr. Musiker, biofeedback has not completely replaced any forms of therapy, but it does allow patients to achieve their goals in a much shorter time and with less need for medication. He has used it to treat anxiety, stress, headaches, vascular problems, and many types of neuromuscular disorders.

Adding an Apple computer to his treatment program has had a very positive influence. "Patients love it," says Musiker, "and the graphics make it much easier for them to see their progress." He adds, "The automatic data storage, sampling, and hard copy provided by the Apple has turned biofeedback into a research-grade process."

Although an avid supporter of biofeedback, Musiker is less than excited about many of the products currently available for use in the home. "Even a high-quality product is relatively worthless without proper coaching and support, and most of the ones I have seen are far from high quality" he says. "Low-priced units are quite prone to false readings and interference from stray electrical signals."

One serious reservation professionals express about biofeedback products for the home is that people are prone to self-diagnosis. One puts it this way: "I would hate to see someone purchase a biofeedback monitor to relieve a headache, only to discover too late that it was caused by something much more serious than simple muscle tension."

In some situations, however, professionals feel a home biofeedback monitor can be of help. Musiker explains, "If someone is taking part in a properly designed, professionally monitored program of stress management, using a well-designed biofeedback device at home helps reinforce the techniques learned here in the office."

What makes one system better than another? Sensitivity is one factor, as is resistance to interference. A well-designed system should also provide feedback that is not self-defeating. For example, a system that relies entirely on graphics may require you to watch the computer's monitor at all times, thus making it difficult to relax completely. The addition of an audio tone would allow you to close your eyes slightly while still receiving the feedback signal.

The open architecture of the Apple makes it the logical choice for add-on devices such as biofeedback monitors. New devices are coming on the market each day. Many are well designed, but some less-than-acceptable units are being released as well. Another point to consider is that a unit well suited to one person may not be the ideal choice for someone else. Professionals who use biofeedback therapy can help recommend the home unit that is best for your particular needs.

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CIRCLE 399 ON READER SERVICE CARD

patient can exercise the weak muscles and gain control of them. The program has helped many patients walk normally again, without the need for splints or braces.

Much of the popularity of biofeedback stems from its "natural" approach. It allows, and even encourages, the body's own natural healing abilities by helping to supply the necessary rest to maintain and restore body cells. Moreover, biofeedback is free of side effects, is nonaddicting, and is less expensive than many other existing therapy programs.

New uses for biofeedback therapy are being developed every day. One of the most exciting experiments involves the treatment and control of certain types of cardiac arrhythmias, or irregular heartbeats. Research is showing that patients who suffer from this condition can learn to control their own heartbeat with the help of biofeedback training. With practice, patients have learned to produce the irregular heartbeats on command. More important, these same patients learn how to limit the event as well—sometimes eliminating it completely.

Thanks to the Apple computer's excellent graphics, even young children can now benefit from biofeedback therapy. The technique has proved to be of great value in treating a variety of conditions affecting the young, including neuromuscular disorders such as cerebral palsy.

As biofeedback becomes more accepted, the Apple will be right by its side. The next time you reach for an aspirin to relieve a headache, or an antacid to soothe your stomach, think of that old saying, "An Apple a day. . . ." It is truer now than ever before! ✚

Chuck Doherty is an independent computer consultant and free-lance writer from South Dartmouth, MA. His work regularly appears in computer and audio publications. Robert Cowart is a free-lance computer consultant, programmer, and writer based in the San Francisco Bay Area.

▶ PRODUCT INFORMATION

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PART THREE

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THE APPLE Dietitian

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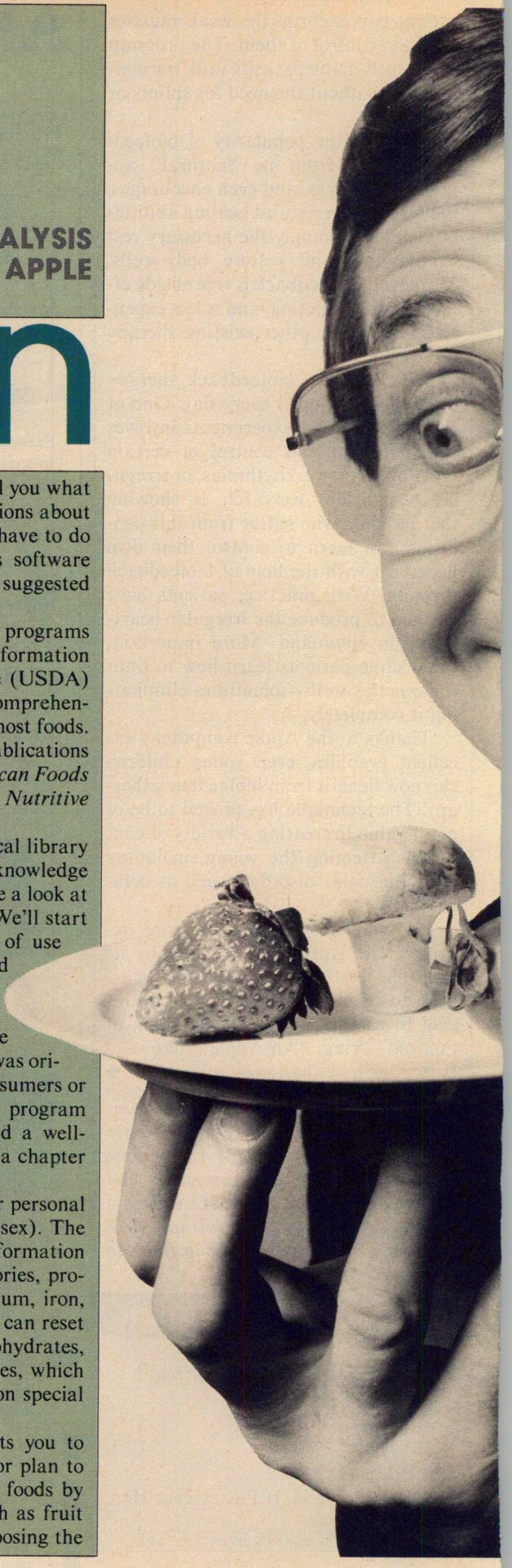

Remember when the word *nutrition* meant the four basic food groups and three well-balanced meals? Well, today many of you are more concerned about what you eat and its relationship to the quality of your life. You may have already made permanent changes in your eating habits (more grains, fruits, and vegetables; less salt and sugar).

Determining the nutritional value of your meals hasn't always been easy. That's where your Apple computer comes in. Because of the computer's ability to store and retrieve large amounts of information, your Apple, coupled with a nutrition-software program, can be a valuable tool in helping you analyze the nutritional content of the foods you and your family eat. Not only can your Apple help you analyze foods, but it can also help plan special diets and menus, determine activity levels for weight gain/loss, and summarize and store meal information.

We'll examine five available nutritional-analysis packages: The Eating Machine, Dietician, Nutri-Calc, Nutritionist II, and Healthaide. For those of you who subscribe to CompuServe or the Delphi information service, we'll look at what they have to offer in the way of nutrition information. Finally, we'll consider ways to select the best nutrition software.

Most of the software reviewed here was developed for the use of health professionals (dietitians, nutritionists, physicians) for analysis of past meals and planning of future ones. Thus, these programs assume that users have a broad range of knowledge about nutrition. Most home users will need to spend some time reading about basic nutrition and determining the ideal nutritional makeup of their diet. Be aware that most programs won't tell you what to eat or make recommendations about your diet, so you're going to have to do some research to make this software truly useful (see the list of suggested reading material).

Much of the data these programs use is based on nutritional information in U.S. Dept. of Agriculture (USDA) publications, which give a comprehensive nutrient breakdown for most foods. Two well-known USDA publications are *Nutritive Value of American Foods* and its abbreviated version, *Nutritive Value of Foods*.

Before you rush to your local library or bookstore to fortify your knowledge with nutrition books, let's take a look at the five nutrition programs. We'll start with the simplest—in terms of use and required knowledge—and work to the more complex.

The Eating Machine

The Eating Machine is the only program of the five that was originally designed for home consumers or educational institutions. The program comes with two diskettes and a well-written manual that includes a chapter on the basics of nutrition.

You begin by entering your personal information (name, age, and sex). The Eating Machine uses this information to set your allowance for calories, protein, vitamins A and C, calcium, iron, sodium, fat, and alcohol. You can reset the limits for protein, carbohydrates, fat, and alcohol to other values, which can be important for people on special diets.

The program then prompts you to enter the foods you've eaten or plan to eat (by meal). You enter the foods by choosing the food group (such as fruit and fruit juices), and then choosing the

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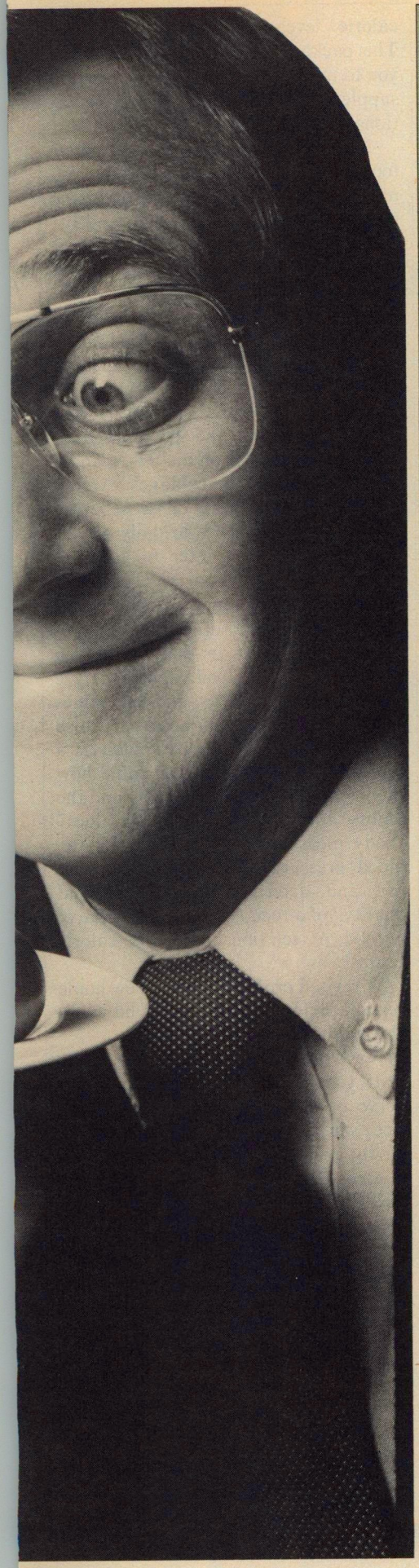

appropriate food (such as orange juice). For planning purposes, you can view the composition of individual foods before entering them, and you can store standard meals (such as a turkey sandwich and milk for lunch) as a single food, which expedites meal entry. The program comes with 500 foods, including fast foods and alcohol, and you can enter approximately 200 additional foods. You can also analyze your favorite recipes and change the nutritional data of foods that are already on your list.

Once you've entered all the foods, The Eating Machine can display your "nutritional score" as a bar graph or as a summary. The bar graph shows how close you've come to meeting your daily nutritional needs or goals, on the basis of the USRDA, the recommended daily allowance (see box, page 42, for explanation). Depending on whether you meet your calorie, vitamin, or protein allowance, the program gives you a "happy" face or a "sad" face with an obnoxious beep. The program gives you recommendations on foods to eat to correct any deficiencies. You also get the value of the percentage of your calories from fat and alcohol.

By creating a personal file, you can save your daily totals and get a summary (historical average) of your nutritional scores. If you want to save nutritional information, you have to do it this way, since the program cannot save lists of foods you eat or their nutritional information.

Dietician

Dietician is an easy-to-use analysis program with some limitations. The program determines only the calorie, carbohydrate, protein, fat, cholesterol, and sodium values of foods. This amount of information is probably sufficient for most users, but if you need to plan special diets (to keep track of calcium, for example), this program may not be complete enough. The program also doesn't help users decide on acceptable nutrient levels.

Dietician comes with a list of 700 foods. You can add other foods by creating additional data diskettes (each can hold 500 foods). Most users will want to add foods to this program, since the foods it lists are generic (no fast or processed foods, or alcohol).

You enter foods by choosing a food group and then selecting a food from the list. Rather than entering the foods by meal, you must enter them for the whole day. You can check individual foods before adding them to your diet, and you can easily add or delete them. You can also analyze recipes and save diets to diskette and later retrieve, change, and print them.

A Macintosh version of this program, geared toward home consumers, became available in October 1984.

Nutri-Calc

Nutri-Calc was originally designed as an aid for health professionals. The software consists of two programs: Nutri-Calc, for nutritional analysis, and Calorie-Magic for calculating a weight gain/loss program. Nutri-Calc comes with 730 foods, including 90 brand-name items and 53 formulas (baby and special dietary). The program determines food composition in terms of 18 nutrients as well as fluids, calories, and total food weight. If you have special needs or want a particularly thorough analysis, this complete nutrient breakdown is important. You can define up to 20 target daily allowances to substitute for the USRDA.

Your Apple can be a valuable tool in helping you analyze the nutritional content of the foods you eat.

You enter foods for the entire day, rather than by meal, using numbers from the USDA's *Nutritive Value of Foods*. The program helps you find these numbers if you enter food-group names, but entering your daily food intake is still a tedious process.

Nutri-Calc gives you a summary and graph of the totals and the percentages and compares them to the RDA. You cannot save your daily diet to diskette, but the program can give you a seven-day average of your nutritional intake. You can change the nutrient data for listed foods, add new food items, print lists of foods and their nutrient data, and analyze recipes or menus. A personal version of Nutri-Calc came out in late 1984, and a Macintosh version is expected in the first quarter of 1985.

Nutritionist II

Nutritionist II is a professionally oriented program that provides a more complete analysis than what most home consumers are likely to need. The software package includes two diskettes, a

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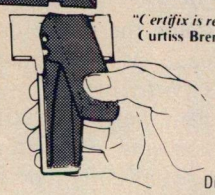

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manual, a copy of the USDA bulletin *Nutritive Value of Foods*, and an exercise/weight brochure from The President's Council on Physical Fitness and Sports.

The program comes with a list of 847 foods, and you can add more. Listed foods include baby food, fast food, spices, and wine. Foods are analyzed for 37 nutrients, 11 amino acids, and number of calories. What's more, you can determine the best food value based on cost, and the package contains a Fit Program (fitness/activity program).

Nutritionist II's menu-driven format does add extra steps to program use. You enter foods by number, which you can obtain from the USDA bulletin or from the program by entering the first

Before you buy a nutritional-analysis package, take a look at your life-style and needs.

three letters of the desired food group. You can enter foods for the entire day or broken into meals by entering a meal code. Each menu option has additional commands at the bottom of the screen.

The analysis covers three display screens, in a bar-graph format. The program can sort a diet by a specific nutrient to determine food(s) causing an excess or deficiency. You can then use the Filter/Exchange/Substitute option to identify foods that will balance the diet. You can save up to 30 diets per diskette. Analysis of single foods and recipes is also possible.

The Food Editor program lets you add foods, list/print food lists, and change nutrient values for foods. Similarly, the RDAFile Editor lets you add RDA group (age, sex) categories and change the RDA values the program uses to analyze a diet.

Healthaide

Another professional nutritional analysis package is Healthaide. It is the most complex of all the software reviewed here, in terms of operation and features. The package includes two double-sided diskettes and a 140-page manual with a chapter on nutritional data. Healthaide includes a list of 720 foods, which it can analyze for 35 nutrients, including eight amino acids. Other parts of the package are an activity program and menus for seven different calorie levels (1000–3000 calories). This package is the only one that allows you to take account of vitamin/mineral supplements in your daily diet calculations.

Healthaide prompts you to enter foods by meal. To enter food items, you must use the food codes listed in the manual. You can change your food list only after saving the diet to diskette and then recalling it. This requirement can make entering foods for three meals a lengthy process. A useful feature is the ability to select four nutrients whose running totals are updated and displayed as you enter foods.

The meal analysis includes a list of the total amount and percentage of each nutrient, based on the RDA, and a bar graph of the percentages. Amino acids, if any, appear on a separate screen. You can save your daily diet to diskette and use it later to generate monthly/yearly summaries.

Healthaide has many features that are standard on other nutritional-analysis programs, in that it lets you add foods, change food values, analyze single foods or recipes, and use values other than the RDA for analysis. It also has several unique features, such as a diet guide to help you determine how many calories you burn per day and the ability to set ten "personal values" (body measurements, emotional state, blood pressure), generate a shopping list, and determine the "nutritional quality" of a food (the nutrient value of a food in relationship to its calorie count).

A revised professional and new home version of Healthaide should be available in the first half of 1985.

Better Nutrition via Modem

If you subscribe to either CompuServe or the Delphi information service, you can now access (free, except for the phone charges) a new medical-reference source called Healthnet. Healthnet provides on-line information from a team of medical specialists on topics such as nutrition, fitness, diseases, drugs, and other medical concerns.

This service includes a question/answer column, a newsletter covering medical issues, and a service that allows you personally to ask for and receive information from a physician via electronic mail for $15 per question. Addition of a reference library covering many health and medical topics was scheduled for the end of 1984. Among the nutritional topics are basic nutri-

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While reading about nutrition, shopping for food, or using any nutrition-analysis software, you are going to run into the abbreviations RDA and USRDA. Sometimes these terms are used erroneously to mean the same thing, but, in fact, they refer to two similar but different sets of nutritional recommendations.

RDA stands for recommended *dietary* allowances. These nutritional recommendations are issued by an independent, semiofficial agency called the Food and Nutrition Board. The allowances, which are given as a range, are "designed for the maintenance of good nutrition of practically all healthy people in the U.S.A." based on their age and sex. The RDA does not take into account individual factors or special nutritional requirements of some individuals. The recommended dietary allowances cover ten vitamins, six minerals, protein, and calories.

Because the Food and Nutrition Board's recommended dietary allowances were considered too cumbersome for the public to use, the Federal Food and Drug Administration devised the USRDA—U.S. recommended *daily* allowances. This set of allowances is based on the RDA but is not broken down by age or sex. It is the basis for the nutritional information on the packages of processed foods and vitamins that show the percentage of essential nutrients per serving. Since the USRDA listings give only one value per nutrient (generally the higher value on the RDA range), food labels generally indicate larger nutrient amounts than most individuals need.

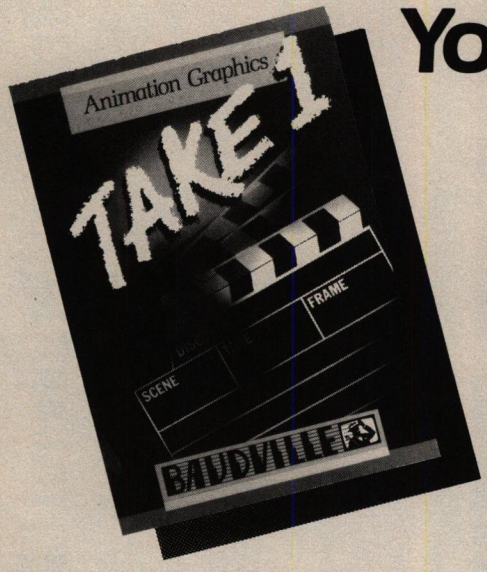
tion, vitamins and minerals, various diets, types of exercise, and holistic medicine.

So you want to eat better, and you're sold on the idea of using your Apple to help you do that? Before you buy a nutritional-analysis package, though, you need to do a little soul searching. Take a look at your life-style and needs. Ask yourself the following questions:

- How much do I know about nutrition? Am I willing to do additional research?
- Will I be using this program daily, or will it get only occasional use?
- Do I need to plan special menus or diets, such as low salt or diabetic?
- How much time do I want to spend to learn to use the software and to use the program every day?
- What special features do I want, such as a fitness/activity program, weekly/monthly summaries, diet storage to diskette, or ability to use nutritional guidelines other than the RDA?

Once you have some idea about the type of software you want, you're ready to take a look at the available software at your computer store. Besides noting if the software has the features you want, look to see if the instructions and operations are easy to use, and what nutritional standard was used to develop the software. And, most important, assess how much knowledge of nutrition you need in order to use the program successfully. Remember, for a nutrition-software package to help improve your diet, it must be a tool you can enjoy using daily. To your good health! ✚

Francesca Venning-Townsley, a writer/instructional designer, has written about computer products since 1982. Technical assistance was provided by Chris Dedering, a nutrition consultant and instructional designer in Sunnyvale, California.



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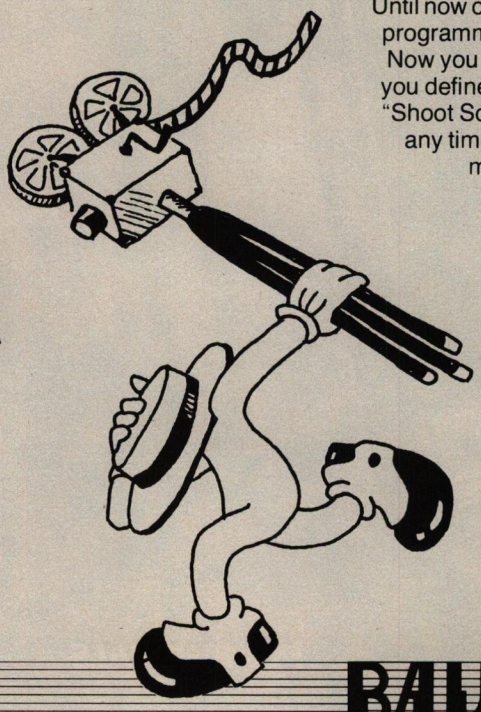

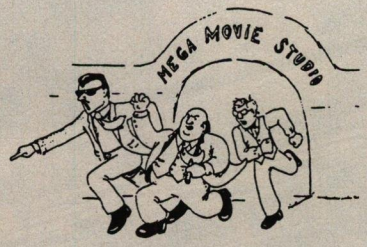

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SUGGESTED READING

Jane Brody's Nutrition Book
Jane Brody
Bantam Books, 1981

Nutrition and Your Health: Dietary Guidelines for Americans
U.S. Dept. of Agriculture
HEW Office of Governmental and Public Affairs
Washington, DC 20250

The American Way of Life Need Not Be Hazardous to Your Health
John W. Farquhar, M.D.
Norton, 1978

OTHER REFERENCES

Nutritive Value of American Foods
Handbook #456

Nutritive Value of Foods
Handbook #72
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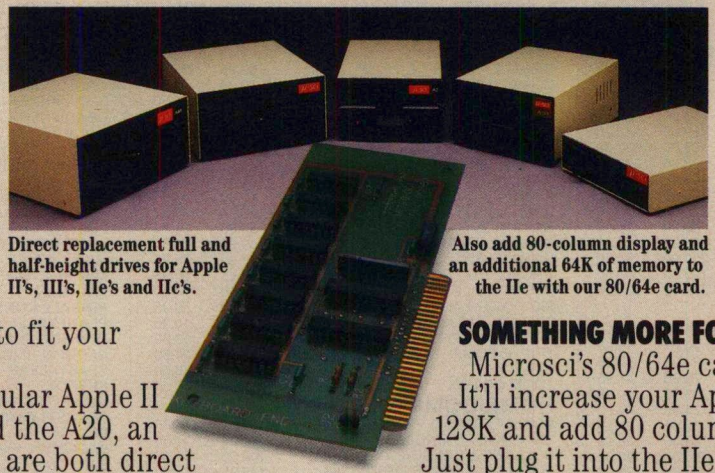

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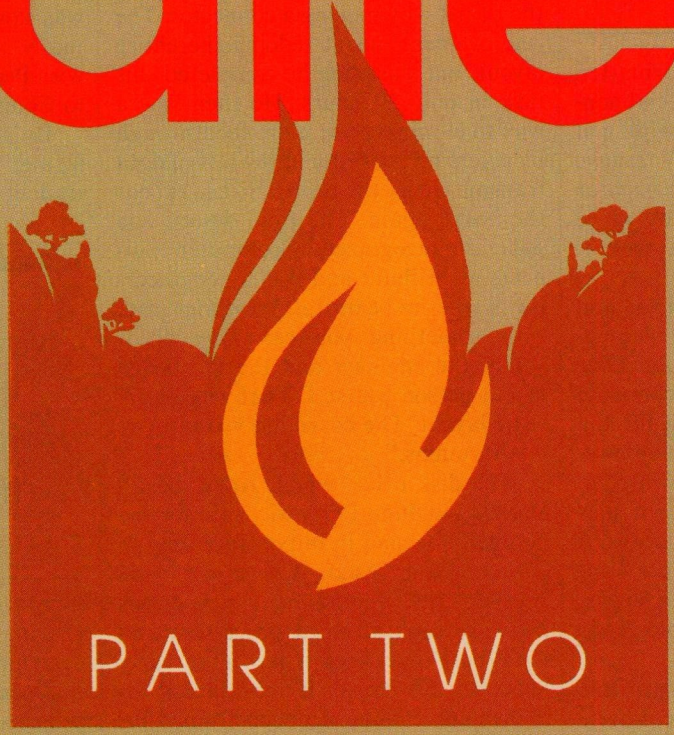
CIRCLE 275 ON READER SERVICE CARD

▶ BOOK EXCERPT/BY PAUL FREIBERGER AND MICHAEL SWAINE

This month we are finishing our two-part condensed excerpt on the history of Apple Computer that began in the December issue. The book *Fire in the Valley*, by Paul Freiberger and Michael Swaine, chronicles the development of the personal-computer industry. Freiberger and Swaine are both veteran technology writers who formerly covered the microcomputer beat for *InfoWorld*. Freiberger is now an editor of *Popular Computing*, and Swaine is editor-in-chief of *Dr. Dobb's Journal*. Last month's installment was the modern-day Horatio Alger story about two guys named Steve who sold their VW and two calculators to start a company that was destined to become the first corporation to make the exclusive Fortune 500 list in only five years.

This month we start the story with Steve Wozniak's amazing Christmas-vacation effort that resulted in the Apple Disk II, a burst of genius that gave Apple a real boost in the computer industry. We follow the Apple story from the highs of Woz's Disk II to the lows of the Apple III fiasco, and finish with Apple's great hope, the Macintosh.

FIRE IN THE valley



PART TWO

Before the end of 1977 Woz had started working on his next big project. The idea arose from an executive board meeting in December 1977. Present at the meeting were Mike Markkula, Mike Scott, Rod Holt, Jobs, and Woz. Markkula stepped forward and wrote on a board a list of goals for the company. At the top of the list Woz saw the words "floppy disk."

"I don't know how floppy disks work," Woz thought.

Nevertheless he knew Markkula was right. Cassette tape storage of data was utterly unreliable. Dealers were complaining about it. Markkula had decided that the disk drive was essential. Markkula was fed up with the laborious task of reading data off cassette tapes. He told Woz that he wanted the disk ready for the Consumer Electronics Show that Apple would attend in January.

Markkula knew the effect his words would have. They would take away Woz's Christmas vacation. It was entirely unreasonable to expect anyone to devise a functioning disk drive in a month. But that was the kind of challenge Woz thrived on. No one had to tell him to work long hours over the vacation. He drove himself.

In fact, Woz was not ignorant about disk drives. He had, until then, never read a book on the subject or worked on disk drives professionally, but while at HP he had examined a manual from Shugart, the Silicon Valley disk drive manufacturer. As an experiment Woz had conceived a circuit that would do much of what the Shugart manual said was needed to control a disk drive. Woz didn't know how computers actually controlled drives, but his method had seemed to him particularly simple and clever. When Markkula challenged him to put a disk drive on the Apple, he recalled that circuit and began considering its feasibility. He looked at the way other computer companies—including IBM—controlled drives. He also began to examine disk drives—particularly North Star's. After reading the North Star manual, Woz knew that his circuit would do what theirs did and more. He knew he really had a clever design.

But the clever circuit was only part of the disk control problem. The puzzle had other pieces—synchronization. A disk drive presents tricky problems of timing. IBM's technique involved complex circuitry, which Woz studied until he understood it. But that circuitry was unnecessary, he saw, if the way the data

MICHAEL SANCHEZ

were written to the disk was altered. Since this was his machine, he could redefine anything he wanted, so he eliminated the synchronization circuitry completely. The drive would synchronize itself automatically with no hardware circuitry at all, and this "self-sync" technique scored a point against IBM. Woz knew that because the mammoth corporation lacked this kind of flexibility, it *couldn't* do what he had done, and he also knew that whatever economies of scale IBM could bring to bear, no circuitry is still less expensive than some.

Wozniak could now write the software to read from and write to the disk. At this point he called in Randy Wigginton to help. Woz wanted a formatter, a program that would write special non-data to the disk, essentially wiping it clean to set it up for use. Woz gave Wigginton just the essentials, such as how to make the drive motor move through software. Wigginton took it from there.

The final design was generally recognized by computer engineers as brilliant.

Woz and Wigginton worked day and night throughout December, even laboring for ten hours on Christmas Day. They knew they couldn't get a complete disk operating system running for the show, so they spent time developing a demo operating system. They wanted to be able to type in one-letter file names and read files stored in fixed locations on the disk. When they left for the Consumer Electronics show in Las Vegas, however, they weren't even able to do that.

Wigginton and Woz arrived in Las Vegas the night before the event. The Consumer Electronics Show was not a hobby computer show. Many of the exhibitors were established consumer electronics firms producing stereo equipment and calculators. The buyers of such items were general consumers, not electronics hobbyists. But Markkula wanted Apple to pursue a broader market, and he regarded this show as vital for Apple's growth. For Woz and Wigginton, it was an adventure outside time.

They helped set up the booth that night and went back to work on the drive, planning to have it done when the show opened in the morning even if they had to go without sleep. Staying up all night is no novelty in Las Vegas, and that's what they did, taking periodic breaks from programming to inspect the craps tables. Wigginton, 17, was elated when he won $35 at craps, and then he accidentally erased a disk they had been working on. Woz patiently helped him reconstruct the information on the disk. They tried to take a nap at 7:30 that morning, but were both too keyed up.

After the show, Woz completed the disk drive, consulting Rod Holt on what he could really expect the drives to do. Woz himself laid out the circuit board that was to control the drive. Normally the layout work was sent to a contracting firm, but the contractor was busy and Woz wasn't. He worked on it every night until two in the morning for two weeks. When he was finished, he saw a way to cut down on feedthroughs—signal lines crossing on the board—by moving a connector. The improvement meant redoing the entire layout, but this time he completed this task in only 20 hours. He then saw a way to eliminate one more feedthrough by reversing the order of the bits of data transmitted by the board. So he laid out the board again. The final design was generally recognized by computer engineers as brilliant and was by engineering aesthetics beautiful. Woz later said, "It's something you can *only* do if you're the engineer and the PC board layout person yourself. That was an artistic layout. The board has virtually no feedthroughs."

The disk drive, which Apple began shipping in June 1978, was vital for the company, second in importance only to the computer itself. The drive made possible the development of serious software such as word processors and data base packages. Like most early successes at Apple, it represented an enormous amount of unconstrained individual effort. But the hobbyist spirit was being channeled by a few sharp executives who understood how to build a company.

The Apple III Fiasco

During Apple's third fiscal year, which ended on September 30, 1979, sales of the Apple II increased to 35,100, more than quadruple those of the previous year. Nevertheless, the company recognized a need to develop another product soon. No one believed that the Apple II could remain a best-seller for more than another year or two.

In 1978 Apple took several steps to gear up for the challenge. Chuck Peddle was hired in the summer although his responsibilities were unclear. As the designer of both the 6502 microprocessor and Commodore's PET computer, which was competing with the Apple, he seemed like a good person to have around. Before Apple had emerged from the garage, Peddle had tried to convince Commodore to purchase the small operation. But Apple and Commodore were unable to come to terms. Peddle's PET (said to stand for Personal Electronic Transactor or Peddle's Ego Trip, but actually named after the pet rock phenomenon of the day) was introduced at the same time as the Apple II at the First West Coast Computer Faire in 1977. The PET did not greatly influence the development of the American personal computer industry because company president Jack Tramiel opted to concentrate on European sales and because Commodore was slow to provide a disk drive. Eventually, Apple executives failed to agree with Peddle on his role, and he returned to Commodore at the end of 1978.

By that time Tom Whitney, Woz's former boss at Hewlett-Packard and a student at Iowa State University, was hired to supervise and enlarge the engineering department in order to begin designing new products.

No one believed that the Apple II could remain a best-seller for more than another year or two.

In late 1978 several new computer projects were started. The first, an enhanced version of the Apple II with custom chips, was code-named Annie. Woz worked with another engineer on it but didn't complete the project. Moreover, he didn't pursue it with the intensity he had given his previous computer designs or the disk drive. Executives also discussed having Woz design a supercomputer utilizing bit-sliced architecture, which would spread the capabilities of the microprocessor over several identical chips. Its chief advan-

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6 Compare sound. The MJ-22 has a built-in speaker and amplifier right up front for the highest quality sound.

7 Compare screen size. The MJ-22 has a full inch more usable space than other 13″ monitors.

8 Compare cost. Dollar for dollar, the MJ-22 will outperform any other monitor in its price range—and many costing far more.

For the Apple II, II+ or IIe, Teknika's MA-RGB7 color board will enhance resolution and sharpen graphics. Or, you may use the MJ-22 in composite/separated video to start with, then step up to RGB in the future.

The Apple IIc can be used in the composite/separated video mode to start with. Then you can step up to RGB when the RGB interface box becomes available.

Apple III has a built-in RGB board. All you need is Teknika's interface cable, MA-23.

Visit your nearest Apple dealer and ask for a demonstration.

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CIRCLE 169 ON READER SERVICE CARD

What every Apple owner should know about

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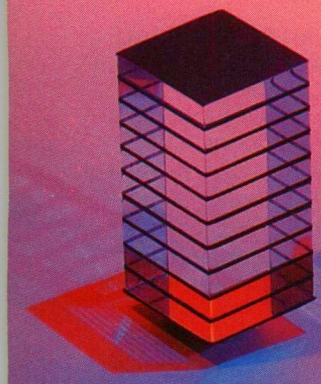

If you own an Apple IIe or IIc—or you're planning to buy one—here are a few things you should know about Quark's Word Juggler word processor.

First of all, Word Juggler is the only word processor that gives you a powerful spelling checker *and* a built-in telecommunications feature. So you can create a document—check it for spelling errors—and then send it via electronic mail. All with just one program.

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Fact is, no other word processor for your Apple IIe or IIc gives you this unique combination of power, functionality and ease of use. And if all these advantages aren't compelling enough, check the price. Suggested retail is only $189.

So visit your favorite dealer today. Ask for a complete demonstration—and for a copy of our brochure, "What Every Apple Owner Should Know About Word Juggler." If you don't have a favorite dealer, but would like one, just call 1 (800) 543-7711. We'll fix you up.

CIRCLE 309 ON READER SERVICE CARD

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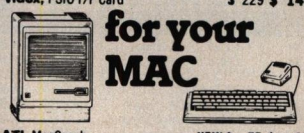

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CIRCLE 129 ON READER SERVICE CARD

tages were speed and variable precision, that is, high precision for scientific data and low precision for integer and character data. An engineering staff was put together for this computer, codenamed Lisa. The Lisa project started slowly and passed through many incarnations over several years. Eventually a former Hewlett-Packard engineer hired by Tom Whitney took over as its project director.

Meanwhile, Wendell Sander took charge of designing the next Apple computer, the Apple III. Sander, one of Apple's most trusted employees, was being asked to design a machine that would equal the success of all the other Apple products. When he commenced work, the company told him that it hoped he could finish it within a year.

Woz had designed the Apple II to be what *he* wanted in a computer. But Sander had constraints from the outset. They derived from a meeting of the executive staff that at the time still included Chuck Peddle. The staff compiled a general and somewhat vague list of guidelines, mentioning such desiderata as enhanced graphics and more memory. There were a few detailed, specific concepts as well. For instance, executives said, the machine should be able to display 80 columns rather than 40, and it should have both upper- and lowercase characters.

In a sense, emulation boxed Sander in, limiting his creativity.

Sander was told that the new machine should be able to run software designed for the Apple II. Although this compatibility was desirable considering the large pool of software being developed for the Apple II by outside programmers, it posed a problem. Designing a computer that is significantly different from another machine but that can still run the other's software is not an easy task. The hardware itself determines, at bottom, what the software must do. The microprocessor chip determines the possible machine language operations, and the disk drive determines the features of the operating system software. When this hardware differs between two machines, the computers can only run the same applications software through an intermediate layer of software built into the machine to permit an "emulation mode." The intermediate layer intercepts commands from the applications program and translates them into corresponding commands—or sequences of commands—for the underlying hardware. The process is inherently inefficient and the inefficiency shows most in programs where timing is vital. The most critical hardware feature in the emulation problem is the microprocessor, and Apple decided to simplify this aspect of it by using the Apple II's processor, the 6502.

The emulation edict was not without controversy. Apple engineers and programmers felt that emulation would limit the capabilities of the breakthrough machine they were supposed to create. *They* wouldn't want this kind of machine, they felt. But the marketing staff saw emulation as a stimulus to sales. First, an existing body of software could run on it immediately. Second, Apple could claim it was designing a family of computers. The decree was not rescinded.

In a sense, emulation boxed Sander in, limiting his creativity. The most important decision in the design of a computer—selection of a microprocessor—had been made by others. In fact, designers of the 6502 hadn't intended it to be used as the central processor in a computer. Apple considered adding an additional processor, a second brain, with some capacity to switch from one to the other. But a dual-processor machine would have been more expensive than the company wanted. Sander wasn't a person to protest. He liked computer designing, and he took the guidelines and set out to implement them.

Woz occasionally consulted with Sander on the project but he trusted his colleague, who was "an incredible engineer." Nevertheless, Woz later complained about emulation. He would have done it differently. "Apple claims they've got it and they don't," he said.

Since no project had completely captured his attention, Woz was in a joking mood. One day he sneaked into a programmer's cubicle and placed a mouse inside his computer. When the programmer returned it took him more than a few minutes to figure out why his Apple was squeaking.

Delays in the Apple III were soon causing concern in the marketing department. The growing pains of the young company were beginning to show at last. The Apple III was, in fact, the first computer that Apple—as a company—had built from scratch. When the company formed, the Apple II was already near completion. The III was also the first Apple not built by Steve Wozniak in pursuit of his dream machine. Instead it was an awkward collage, pasted together by the many hands of a committee. Often the left hand didn't like what the right hand was doing.

The Apple III was, in fact, the first computer that Apple—as a company—had built from scratch.

Moreover, the pressure put on the Apple III project group for a swift completion probably wasn't even necessary. Although new companies were entering the personal computer market, Apple had erased the gap with Radio Shack and had become the leading personal computer company. In 1980, Apple II sales doubled to more than 78,000. Nevertheless the marketing people were worried. The Apple III must be announced.

Sander consented to introduce the new machine at the National Computer Conference in May 1980 in Anaheim, California. He felt that curtain raising was a bit premature. Nonetheless, there were a few working prototypes and the operating system software was "in workable shape." Perhaps it could be managed.

At the NCC the Apple III was well received by the industry and the press. The glamor story was continuing. In addition to unveiling the computer, Apple also announced the software it intended to have for the machine when shipping began a few months later: a word processor, a spreadsheet program, an enhanced BASIC, and a "sophisticated" operating system. The marketing plan was to portray the III as a serious computer that could be used in the office. It seemed likely to succeed.

A few months later, continuing to ride the tide of acclaim, Apple announced its first public stock offering.

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CIRCLE 116 ON READER SERVICE CARD

The *Wall Street Journal* wrote, "Not since Eve has an apple posed such temptation." When Apple was first formed, Mike Markkula dreamed of building the largest privately-held company in the nation, a company fully owned by its employees. But the industry was growing faster than anyone had foreseen. To keep pace, investment for research and development as well as advertising and marketing was essential. On November 7, 1980, when the company filed its registration with the Securities and Exchange Commission for an initial public offering, Apple revealed that its advertising budget for the year had doubled to $4.5 million.

Once shipments of the Apple III commenced in the fall of 1980, it became apparent that the machines were defective. Users brought the computers back to their dealers complaining that programs were crashing inexplicably. The dealers started complaining to Apple.

The *Wall Street Journal* wrote 'Not since Eve has an apple posed such temptation.'

The Apple III staff began attempting to isolate the problem, carrying out the diagnostic tests they should have done before the computer was announced, or at least before it was released. As mishaps with the III became public knowledge, Apple slowed its promotion of the new computer and called a temporary halt to production. Soon the staff had identified one problem: a loose connector. While working on the Apple III, Dan Kottke had noticed that on occasion the machine would die. When he picked it up a half inch off the table and let it drop, it would turn on again. Kottke suspected a faulty connector. But he had hesitated, as a lowly technician, to broach his doubts to his superiors. And Sander, an engineer, was not involved with mechanical details like connectors. The problem had fallen through the cracks.

Another shortcoming stemmed from a bad break. Sander had counted on having a special National Semiconductor chip to use as an internal electronic clock. National finally informed him that the chip would not be available. Apple considered other chips and finally scrapped the entire idea. But since the Apple III had been advertised as having an internal electronic clock, the price had to be lowered since a promised feature was absent.

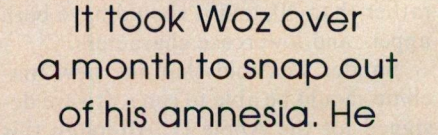
The problems were identified by January 1981, but selling a defective computer for several months had hurt Apple's reputation. Until then the company had done no wrong, and a certain overconfidence led Jobs, Markkula, and Scott to release the computer without proper testing.

Black Wednesday

On February 7, 1981, Woz crashed his four-seater single-engine airplane at the Scotts Valley Airport, just a short drive from Apple. He had been practicing touch-and-go landings with two friends and his fiancee. Woz and his sweetheart were injured, but he was lucky not to have smashed into a skating rink just 200 feet away where hundreds of children were playing.

Woz suffered cuts on his face but was considered in good condition otherwise. No one realized, not even Woz, that he had hit his head badly enough to bring on a serious case of amnesia. Soon he found he could remember everything up to the day before the accident, but could form no new long-term memories. At the time Woz's family and friends didn't understand the problem. They just thought he seemed a bit slow.

"I didn't know I had had a crash," said Woz. "I didn't know I had been in the hospital. I didn't know I had played games on my computer in the hospital. I thought I was just resting on a weekend and after the weekend I would go back to work at Apple."



It took Woz over a month to snap out of his amnesia. He says that he talked himself out of it.

It took Woz over a month to snap out of his amnesia. He says that he talked himself out of it. As the image of a plane crash passed repeatedly through his mind, he finally realized that he had had an accident. "I went from zero to a one state in my head."

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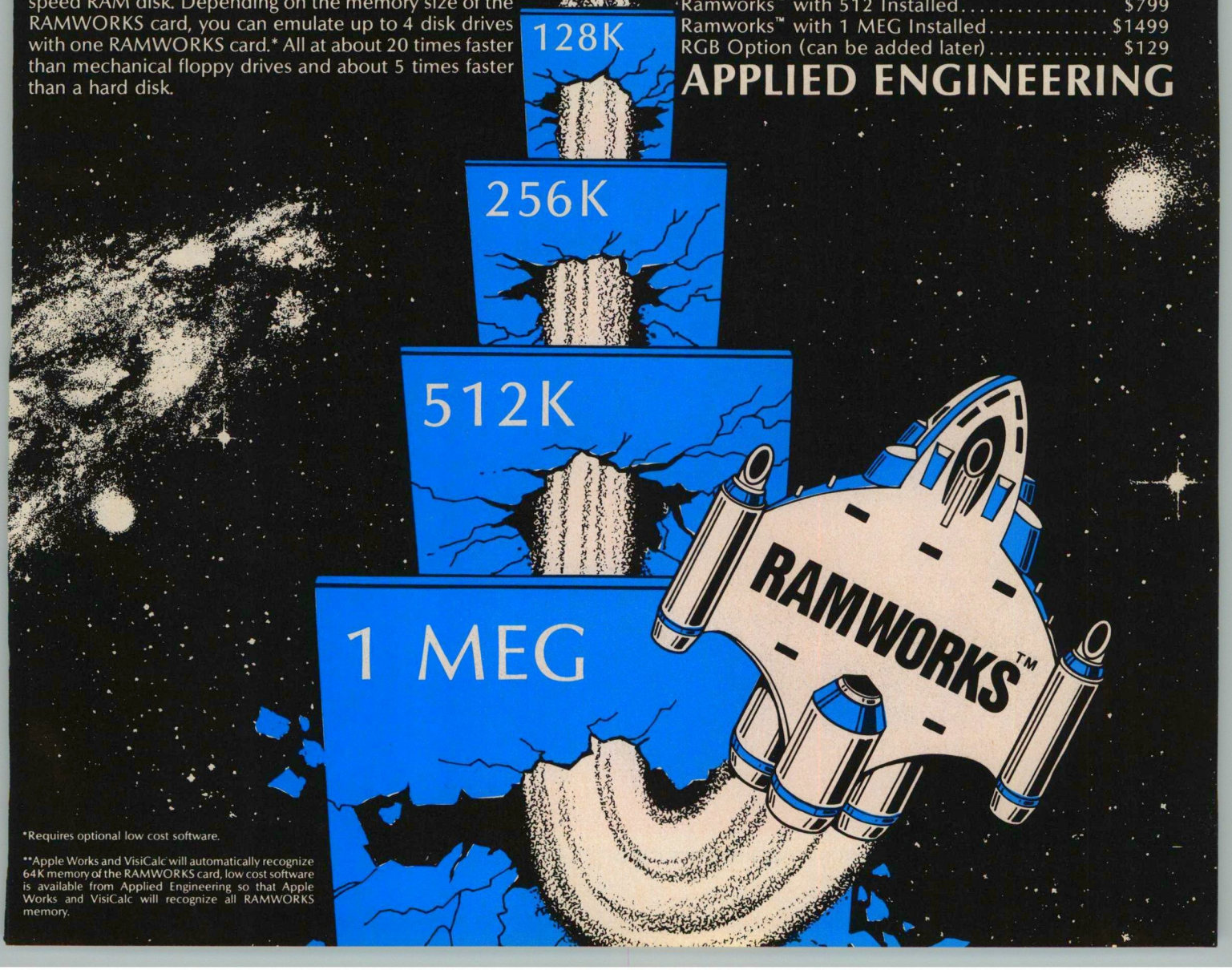

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CIRCLE 195 ON READER SERVICE CARD

Woz didn't want to return to Apple right away. He had already gradually phased himself out of major decision-making there. He wasn't interested in it. He didn't understand business. He was an engineer and he had continued to work on the engineering projects assigned to him. "I'm not a manager type. I just love instruction sets," he said.

One of his last projects before the crash involved creating math routines for a new software program that Randy Wigginton was developing. The program itself was Mike Scott's idea. Frustrated with the long project delays at Apple, Scott had ignored the company bureaucracy and assigned Wigginton to develop a spreadsheet program similar to VisiCalc.

Wigginton worked faster than Woz had anticipated and was ready for the routines almost before Woz had begun. Mike Scott, angered by Woz's inconsistent work habits and by delays in shipping of the Apple III, began pressuring him. Woz worked night and day, suffering Scotty's daily complaints about his slow progress.

Woz still isn't sure, but he believes he may have had the final spreadsheet routines with him when he crashed the plane. But subsequent events at Apple wiped out more than this program.

Just three weeks after Woz's accident, Mike Scott decided that Apple needed a good healthy shakeup. The ship he was trying to steer had sunk a bit in his estimation. It was time to jettison the dead weight. And so on a day referred to as Black Wednesday he fired 40 Apple employees. In addition, he terminated several hardware projects that he believed were taking too long. The move stunned the company at every level.

Just three weeks after Woz's accident, Mike Scott decided that Apple needed a good healthy shakeup.

Mike Scott had never hidden his volatile personality. He had had a number of arguments with both Woz and Jobs. "I've never yelled with anybody more in my life," Jobs recalled. Sometimes Jobs would leave the president's office in tears after a long altercation.

Scott was known for his flamboyance. He was a familiar figure walking about the company, visiting line employees regularly to keep in touch with what was happening. Scott also knew how to promote the company's morale, as evidenced by his suggestion that the company pay for a trip to Hawaii for the entire staff.

But the Apple III exhausted Scotty's limited patience. Since the actual need for the firings was unclear, the young company was shocked. At first remaining employees wondered who would be next. Simultaneously, they mounted an

At first remaining employees wondered who would be next.

effort to hire back some of the people Scotty had fired. Even those who agreed that a shakeup was necessary felt that Scott had fired some good employees unfairly.

Chris Espinosa visited Jobs in his office the day after the firings and told him, "This is a helluva way to run a company." Jobs defended the mass ejection, but Espinosa nonetheless found him demoralized too. In fact, Scotty had acted too arbitrarily for the taste of either Jobs or Markkula. A month later, they demoted him to a lesser rank. He was no longer at the helm. By July Scott decided this state of affairs was intolerable. In his bitter letter of resignation, dated July 17, he announced that he was fed up with "hypocrisy, yes-men, foolhardy plans, a 'cover your ass' attitude and empire builders." Perhaps his most significant allegation, one which epitomized his approach to management, was that "A company's quality of life is not and cannot be set by a committee." The next day he flew to Germany to attend the Bayreuth opera festival, something he had wanted to do all his life.

Despite the problems with the Apple III, Woz's amnesia, Black Wednesday and its aftermath, and Scotty's resignation, Apple prospered. As always, Woz's labor of love, the Apple II, carried the company. Net sales of Apple IIs had more than doubled during fiscal 1980 and continued to boom through the first half of 1981. By April 1981, Apple employed more than 1500 people. The company had opened domestic

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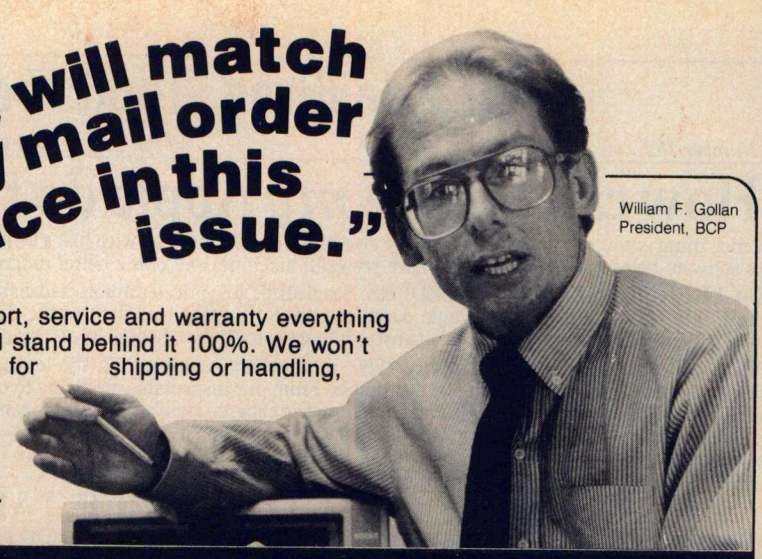

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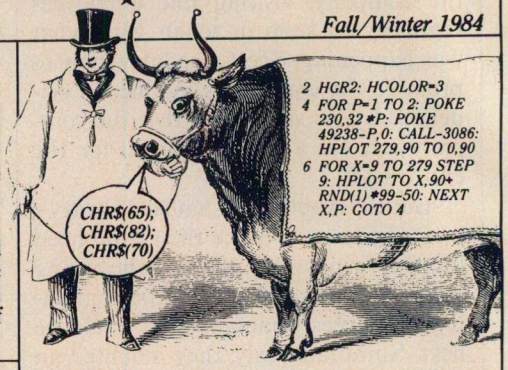

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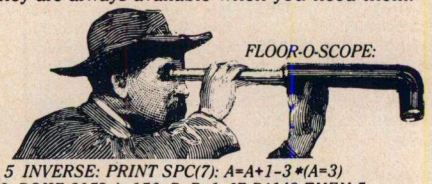


```
5 INVERSE: PRINT SPC(7): A=A+1-3*(A=3)
8 POKE 2053,A+156: B=B+1: IF B<143 THEN 5
```

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Beagle Basic loads Applesoft into RAM and enhances it by replacing unused cassette commands (Shload, etc.) with *new commands* like ELSE—

IF X=2 THEN PRINT "YES": *ELSE* PRINT "NO"

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GOTO and **GOSUB** may precede variables, as in "GOSUB FIX" or "GOTO 10+X". Replace awkward graphics screen pokes with one-word commands, change your ctrl-G Beep to any tone you want...

Rename Applesoft commands & error messages to anything. For clarification, encryption-protection or even foreign translation. For example:

10 POUR X=1 TO 3: ECRIVEZ "BONJOUR": ENSUITE

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A$="Dogfood" ←**VARIABLE-DISPLAY:** prints
X=3.14159 all of a program's strings &
Y=255 variables with current values.

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X: 10 20 3000 & displays line numbers of
Y: 5 40 55 60 each variable & string.

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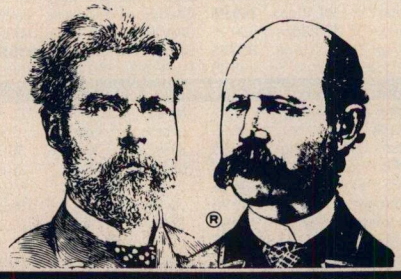

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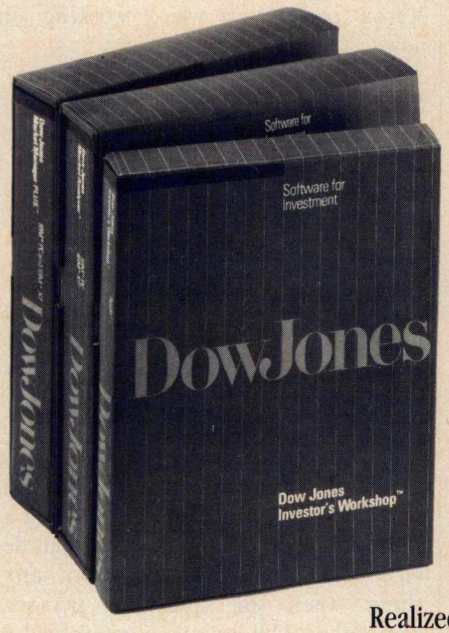

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CIRCLE 225 ON READER SERVICE CARD

manufacturing facilities in San Jose, Los Angeles, and Dallas, in addition to Cupertino. To meet the growing demand in Europe, a facility was opened in Cork, Ireland. Worldwide sales of Apple products were increasing at a pace of 186 percent above the previous year to more than $300 million. The number of Apple dealers had risen to 3000.

Mike Markkula took over as president of Apple, a position he believed to be a temporary one, and at age 26 Steve

The name 'Apple' had become virtually synonymous with 'personal computer.'

Jobs became chairman of the board. Apple was investing millions of dollars in research and development to create a product that would stun the world. They wanted to prove that they had learned the lessons of the Apple III, that Apple could indeed introduce a new product successfully.

By the fall of 1981, rumors abounded in the trade journals about new products Apple was developing. Leaks about Apple's secret projects angered Jobs.

Nevertheless the continued publicity helped to promote the Apple mystique. The company commenced its first national television advertising campaign with talk show host Dick Cavett as its advocate. Jobs was becoming a Silicon Valley celebrity, and thanks in part to its advertising, the name "Apple" had become virtually synonymous with "personal computer."

The Big Leagues

In the fall of 1981 Steve Wozniak returned to school to finish his undergraduate work at UC Berkeley. He enrolled under an assumed name to avoid any special attention from students or faculty. Woz had gotten remarried in the June following his plane crash, and he wanted to take at least a year off from Apple. Although he worked late into the night finishing up his scholastic assignments, he also found time for a new project: a rock music festival called US.

Apple was taking the final steps to correct the damage from the Apple III snafu. Late in the fall Apple officially reintroduced the Apple III. This time the machine included increased memory storage in the form of a hard disk and improved software.

But two other projects were consuming most of Steve Jobs's time. In the spring of 1979 Jobs had paid a visit to Xerox's Palo Alto Research Center (PARC), a laboratory funded by Xerox with millions of dollars to carry out high-tech experiments. PARC scientists frequently foresaw advances in computer technology years before anyone else. Jobs wanted to see what the Xerox researchers were working on now.

He was welcome. "The year before," Jobs said, "I went down to Xerox Development Corporation, which made all of Xerox's venture investments, and I said, 'Look. I will let you invest a million dollars in Apple if you will sort of open the kimono at Xerox PARC.' "

During his tour of PARC, Jobs saw a demonstration of a new computer language, Smalltalk, which emphasized graphics and a new mouse-controlled user interface. The graphics resolution was good enough to allow all sorts of tricks that Jobs knew were impossible on the Apple II or III. The mouse could be used to select options by pointing at things on the screen. It was an input device conceptually distinct from anything then in use on personal computers. The language could lead to a new kind of computer system, one much easier to use.

"I was blown away," Jobs said.

Jobs was so impressed that he decided that Apple should do a similar system. He met resistance. Many people within Apple were not enthusiastic about the idea. "They thought that whatever their own religion was was the way to go," Jobs recalled. So he began to convert people.

Jobs made a second trip to PARC, this time with Bill Atkinson. Bill had been instrumental in getting the Pascal language for the Apple and had substituted for Woz on the Lisa project. Bill was as excited as Jobs about the PARC innovation. Over a few months, Lisa had changed from Woz's multi-chip design to one based on a new, powerful microprocessor from Motorola, the 68000, and this goal in turn changed into Apple's version of the PARC system. Atkinson would create a revolutionary graphics package for it. Not everyone was happy about these transformations, but Jobs had his way.

Jobs even hired one of the principal scientists away from Xerox PARC and assigned him to Lisa. Larry Tessler's task was to design the most advanced personal computer system available and to make Apple the technological leader in an increasingly competitive industry. Former HP engineer John Couch, hired in 1978, was in charge of Lisa. Meanwhile Jobs took control of another independent research project at Apple code-named Macintosh. The Macintosh team was also to use advanced software technology, but was to put it in an economical personal computer.

In 1981 Apple tripled its investments, spending $21 million on new product research and development. Jobs toured the world's leading automated factories and then commissioned one for Apple in Fremont, California, to build the Macintosh. "We have designed the machine to build the machine," Jobs said. "The Apple II was designed in a garage to be built in a garage. Macintosh has been designed from Day One to be highly automated."

Jobs and others at Apple wanted to continue the company's rapid growth and to establish it as the technology leader for several reasons. One was the likelihood of a late-1981 entry into the personal computer market by a company called International Business Machines Corporation.

Apple was not surprised by rumors that IBM planned a personal computer.

'We have designed the machine to build the machine,' Jobs said.

The company had considered the possibility for several years. Jobs described it as a gate coming slowly down, and Apple had been running at top speed for four years to get through before it shut. In fact Apple made this concern public knowledge in its prospectus for its initial stock offering in December 1980. Apple also expected competition soon from Hewlett-Packard and various Japanese firms. But the greatest challenge by far was IBM, the chrome colossus whose name meant "real" computers to most people, a multinational corporation richer than many individual countries were. Whatever IBM had to offer, Apple would be meeting it with its Lisa and Macintosh.

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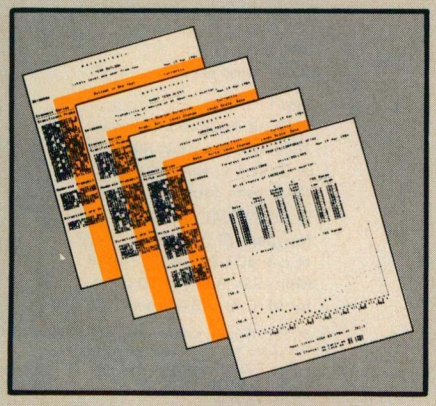

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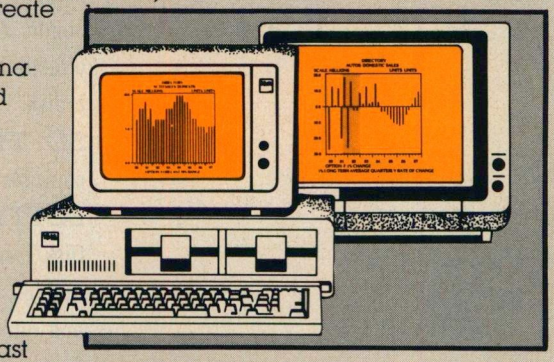

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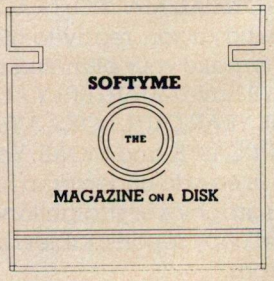

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▶ GRAPHICS/BY ROBERTA SCHWARTZ

SEEING double

PART II: SIX SOFTWARE PACKAGES THAT GIVE YOU DOUBLE-HI-RES GRAPHICS ON YOUR APPLE

A full palette of colors, including red and yellow—it's yours, thanks to double-high-resolution graphics, if you have an Apple IIc or a IIe with a Rev. B motherboard and an Extended 80-Column Card with a double-hi-res jumper installed.

Part I of this two-part article (December 1984) explained the technical aspects of double hi-res and gave you information about the hardware you need to take advantage of this new capability. In this part, we'll look at the software packages that generate double-hi-res graphics.

Apple computers' graphic modes, colors, shape-table commands, and extraordinary variety of graphics hardware and software have made them the most popular personal computers for graphics. Still, if you wanted to render the American flag in high-resolution graphics, you had to settle for Old Glory in orange, white, and electric blue. In fact, you couldn't even create the famous Apple logo on your Apple.

But now double hi-res is here, and your Apple's hi-res page can have a horizontal resolution of 560 pixels and a vertical resolution of 192 pixels in monochrome. With a horizontal resolution of 140 pixels and a vertical resolution of 192 pixels, you get 16 colors (actually only 15 different colors are visible—two appear to be the same gray but have different properties), instead of the 6 in standard hi-res. The hi-res colors include red, blue, and yellow, and you can "mix" them to create a full range of colors.

Software that gives you access to double-hi-res graphics falls into two categories. Nonprogrammers can choose from application programs that allow you to draw and paint on your Apple, using the double-hi-res enhancements. Programmers will be interested in programmers' utilities that give you access to double hi-res from within your own Applesoft programs.

PROGRAMMERS' UTILITIES

Cat Graphics by Penguin Software and HGR6 by ALF use two different approaches to adding double-hi-res commands to Applesoft BASIC. To use either of them, you must be able to program in Applesoft.

Cat Graphics

Cat Graphics from Penguin Software uses the ampersand feature of Applesoft (see box on page 68 and "Rescue Squad," page 193) to add new graphics commands to your Apple. When you install Cat Graphics, you get an enhanced Applesoft language with 55 new, useful commands, including commands to generate points, lines, circles, and boxes. Other commands let you manipulate colors on the screen, slide an image around on the screen, copy a portion of the screen to another screen, and so on. With Cat Graphics you have access to the 16 double-hi-res colors, in addition to Penguin Software's 256 "blended color patterns."

Standard Apple hi-res gives you room for four lines of text below the screen image, but Cat Graphics lets you use as much text as can fit, anywhere you like on the screen, in one of three sizes: large, 20-column text; normal, 40-column text; and small, 80-column text. Be careful! When you reach the bottom line of the screen, the entire screen—graphics and all—slowly scrolls upward and away forever. If you have worked with the DOS Toolkit Character Generator or Higher Text, you're familiar with the effect.

Cat Graphics does not respond to standard Apple Escape-key editing. To edit a line, you must return to the text page by issuing the commands &UNHOOK:&MODE,9, edit your program, and then return to the graphics screen with &REHOOK:&MODE,0.

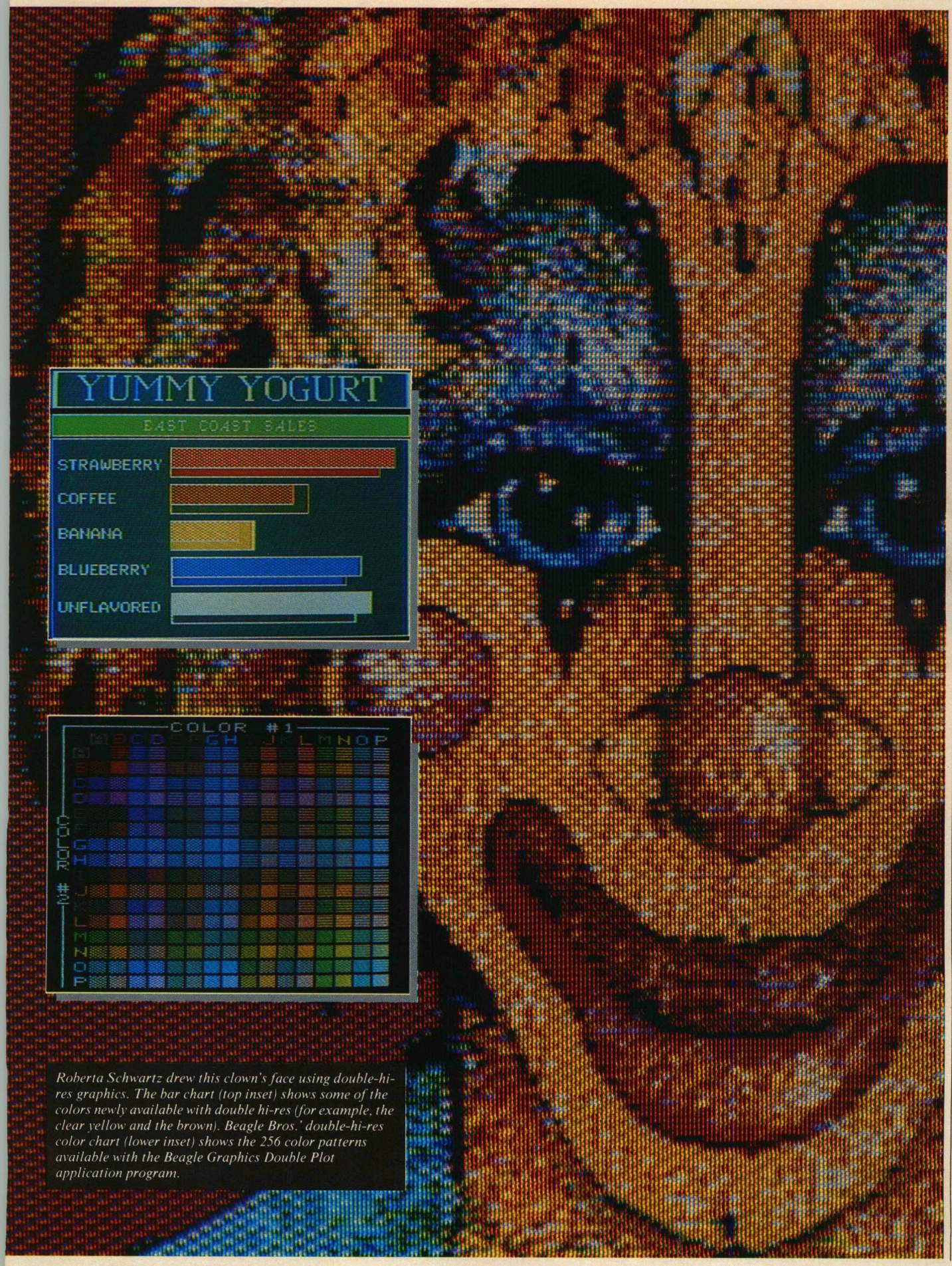
A double-hi-res picture occupies twice as much memory as a regular hi-res picture does. Cat Graphics has a command that compresses images so they take up less room on your disks, though. Loading compressed pictures places information that creates the full image in an unused area of memory. The program uses this information to form the full-size image on the graphics page.

In addition to the ampersand routines, Cat Graphics provides a shape/font editor, a sound editor, and an excellent demonstration program.

Cat Graphics is unprotected, so you can copy the routines to your work disk. The documentation is sufficient for programmers, but beginners will have difficulty learning how to use the program. If you are intimidated by the thought of having to learn new commands and syntax, you might prefer the next software package, which, although not as powerful, is easier to learn.

HGR6

HGR6, by ALF, uses standard Applesoft BASIC commands. In Apple-



Roberta Schwartz drew this clown's face using double-hi-res graphics. The bar chart (top inset) shows some of the colors newly available with double hi-res (for example, the clear yellow and the brown). Beagle Bros.' double-hi-res color chart (lower inset) shows the 256 color patterns available with the Beagle Graphics Double Plot application program.

ROBERTA SCHWARTZ

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soft you use the commands HGR and HGR2 to display and initialize the first or second graphics page, respectively. With HGR6, you have four additional commands: HGR3, HGR4, HGR5, and HGR6. HGR3 and HGR4 are like HGR and HGR2, except that the HPLOT command can work with values ranging from 0 to 559 pixels on the x-axis rather than 0 to 279 pixels in standard hi-res. The HCOLOR command can generate 16 colors.

The HGR5 and HGR6 modes provide the same extra colors, but with the standard 279-pixel horizontal resolution. You may be wondering why anyone would want the 279-pixel resolution when there is an option to double it, but this mode can be useful in certain applications. The HGR6 plotting coordinates are the same as those in standard hi-res, so you can easily modify any programs you have already keyed in to run in the HGR6 modes. All you have to change is the HGR statements.

BEGINNING PROGRAMMERS WHO WANT DOUBLE HI-RES CAN USE HGR6 WITHOUT ADDITIONAL STUDY OR STRUGGLES WITH COMPLEX SYNTAX.

Since HGR6 numbers colors from 0 to 23 (the first eight, colors 0 to 7, are identical to normal hi-res colors and the last 16, 8 to 23, are the new double-hi-res colors), you won't run into a color conflict in the modified program. In addition, you can easily access the new colors by changing the numbers in your HCOLOR statements. Applesoft shape commands work normally with HGR6.

HGR6 provides double-low-resolution graphics with 80 × 48 pixels, rather than 40 × 48 pixels. Like the hi-res commands, all the normal low-res commands are modified in HGR6 to accept the larger plotting values.

HGR6 includes picture compression/expansion routines to alleviate the disk-space problem that double hi-res creates and also provides a slide-show utility.

ALF ships DOS 3.3 and ProDOS versions of the program; neither is copy-protected. The documentation is clear and well produced.

Beginning programmers who want double hi-res can use HGR6 without additional study or struggles with complex syntax. If you are comfortable with Applesoft graphics commands, you will be comfortable with this program.

Doublestuff and Doublestuff Plus

Like HGR6, Doublestuff, from Doublestuff Software, uses standard Applesoft commands, adding double-hi-res capabilities. Once you have booted the Doublestuff master disk, you will see a new prompt, }, in place of the Applesoft bracket,]. To get Applesoft, just type FP; to return to Doublestuff BASIC (a modified version of Applesoft BASIC), type DFP. When you see the } prompt, HGR will enter the Double-Hi-Res mode. The HCOLOR command still selects the hi-res color, but now the choice is 0–15 instead of 0–7. GR gives you the double-low-res mode. You don't have to learn any commands with this program.

Doublestuff is so simple to use that the four-page manual and quick-reference card are sufficient.

Doublestuff Plus places double-hi-res utilities at your fingertips, without making you do any programming. It consists of six programs: two drawing utilities, a shape editor, a character-set editor, a shape shuffler, and Doublestuff BASIC. The program is menu-oriented and relatively easy to use. In the Super Drawing mode you can use a joystick, KoalaPad, or keyboard to draw lines, draw freehand, or draw rays (a series of lines emanating from one point) with your choice of 20 "brushes."

Drawing with a joystick is always cumbersome, but in this program I found that the KoalaPad was not much better. The cursor jumped around the screen, plotting at random points, which was probably due to the software, not the KoalaPad. I was disappointed to find that the program did not accept input from the Apple mouse, until I got in touch with Louis Bonfiglio, author of the program, who informed me that the mouse worked in the Super Drawing mode.

To access the mode, I was supposed to boot the disk, select the Super Draw mode, and then press the Delete key. I tried this method a few times without success. In a final attempt, I pressed all the keys on the keyboard at random, when I was suddenly rewarded with the cursor and excellent mouse control. I have been able to repeat this trick a few times, but I have not yet deciphered which key or which order of key presses does the trick.

When you press C to select a color, a list of the colors, with number assignments, appears at the bottom of the screen. The list does not include samples of the colors or the color mixtures. You also select brushes by number. The program lacks a fill option. To add text or shapes to your image, you must return to the main menu and select the Draw mode, which allows you to use joystick, paddles, or a KoalaPad for input. Be sure to save your picture before returning to the main menu, for the screen clears when you select the Draw mode.

Originally, Doublestuff and Doublestuff Plus were compatible only with the Apple IIe, but the programs have been partially upgraded to work with the Apple IIc. I say partially because the double-low-resolution commands still do not work on the Apple IIc, and the documentation refers only to the Apple IIe.

DOUBLESTUFF PLUS PLACES DOUBLE-HI-RES UTILITIES AT YOUR FINGERTIPS, WITHOUT MAKING YOU DO ANY PROGRAMMING.

Beagle Graphics with Double Plot

Beagle Graphics, like Cat Graphics, uses the ampersand feature, and with it you get 25 new commands to create boxes, circles, fills, and numerous other useful graphics effects. In addition, eight new low-resolution commands let you program with double-low-res graphics.

Beagle Bros. software has a new look—its plastic-bag packaging has been replaced by boxes—but all the extras that Beagle Bros. is known for are still included. The package includes a decal of the Beagle Bros. logo, a Beagle Bros. Peeks and Pokes chart (expanded to include double-hi-res information and a double-hi-res color chart on the reverse side), and two easy-reference color cards of commands, as well as a 100-page manual. The manual contains several utilities that allow you, among other things, to convert existing hi-res graphics to double-hi-res graphics, cut

and paste sections of pictures, pack and unpack (compress and decompress) pictures for disk-storage purposes, change colors in pictures, and so on. The documentation is thorough and clear.

Beagle Graphics includes a font editor and slide-show program, as well as an application program called Double Plot. Double Plot is supposed to accept almost all available input devices, including the AppleMouse II, Apple Graphics Tablet, joystick, paddles, touch tablet, and keyboard. The Graphics Tablet is normally the best choice for input, but it does not work with Double Plot. According to Beagle Bros., the firm doesn't know yet what the problem is, but it's working on it.

BEAGLE GRAPHICS INCLUDES A FONT EDITOR AND SLIDE-SHOW PROGRAM, AS WELL AS AN APPLICATION PROGRAM CALLED DOUBLE PLOT.

From the main menu of Double Plot you can select boxes, circles, lines, and the Freehand Draw, Fill (which allows you to fill an area with one of 256 fill colors and patterns), Paint (with 16 brushes), Text, Mode, and Edit options. When you select Paint, you get samples of the brush choices, and when you select Fill, you see a color chart of the 16 color choices. You can also opt to see the 256 color patterns.

Unfortunately, you can use the extra 240 color patterns only in the Fill mode. The program would be significantly enhanced if you could use the paintbrush with these wonderful color mixtures. Edit allows you to cut and paste portions of your image, invert a selected area, flip an area horizontally or vertically, move an area, save an area into memory, and paste it onto another picture. Mode lets you change your picture back and forth among four modes that vary in horizontal resolution.

Most of the modes have a distinctive cursor. When you are in the Draw or Line mode, your cursor is pencil-shaped. In the Edit mode, your cursor is a pair of scissors for cutting and a pointing finger for pasting. I found these cursors distracting and difficult to position. Fortunately, the disk is unprotected, and with the help of the documentation, you can modify the program to change the cursor shapes.

Graphics Magician Picture Painter

Picture Painter, by Penguin Software, is the double-hi-res version of The Graphics Magician's Picture Object Editor. Picture Painter allows you to draw and paint in double hi-res, but, unlike the other programs in this review, this program saves in a text file the moves you make as you create an image, rather than saving the finished image.

When you want to see your picture, you watch the program redrawing it on the screen—an instant replay of your artistic efforts. You can elect to save your sequential picture as a standard double-hi-res image, but the advantage of saving the drawing moves instead is that you can save a picture in a fraction of the disk space that would otherwise be necessary. This savings is significant when you work with double hi-res, since a single image saved in the standard way requires 66–68 sectors of disk space, which limits you to seven pictures per disk. A Picture Painter file, depending upon the complexity of the image, takes up only 5–16 sectors. Another benefit of Picture Painter is that you can manipulate your drawing moves to get animation effects in your picture.

The May 1984 issue of *A+* included a review of the standard hi-res version of Graphics Magician. The double-hi-res version of this program works exactly like its predecessor, with the bonus of double horizontal resolution and the extra colors (including the Penguin "blends" that bring your color choices up to 256). You can use any of the 256 colors and patterns as fill, and you can also use them in the Brush mode. The Picture Painter works with the following input devices: joystick, mouse, paddles, KoalaPad, trackball, Apple Graphics Tablet, or Houston Instruments HiPad.

If you've been using the old Graphics Magician and are bemoaning the fact that you did not have double hi-res at the time, take heart. You can load sequential pictures that you created with the older package into the new version's editor, convert them to double hi-res with a couple of keystrokes, and then edit and recolor them with the new palette.

By single-stepping through your picture, changing just the color commands, you can convert all of your SPCs (sequential pictures) into DPCs (double-hi-res sequential pictures). It's worth the effort.

The Picture Painter, which is not copy-protected, comes with complete documentation for creating images and using them in your own Applesoft programs.

HOW THEY STACK UP

Cat Graphics is a graphics utility that lets you do things in Applesoft programs that you could not have done before without recourse to assembly language. I recommend this program to those of you who have some programming experience in Applesoft BASIC.

HGR6 does not offer as many enhancements to BASIC as Cat Graphics does, but it gives you access to double-hi-res graphics, and it is easy enough for beginning programmers to use.

PICTURE PAINTER SAVES IN A TEXT FILE THE MOVES YOU MAKE AS YOU CREATE AN IMAGE, RATHER THAN SAVING THE FINISHED IMAGE.

Doublestuff with Doublestuff Plus allows you to take advantage of double-hi-res graphics without having to program at all, as does Beagle Graphics. So, if you just want to be able to draw and paint with double hi-res, these are the packages to consider. Both give you double hi-res, whichever way you want it—as a programming utility or an artists' tool.

Both packages would benefit from less keyboard interaction, however. Working with an input device such as a KoalaPad or mouse is slow and frustrating when you must constantly return to the keyboard to select brushes, colors, and modes.

Doublestuff Software deserves kudos for publishing the first double-hi-res software, but neither of these programs has as many capabilities as the newer packages do, nor are they as polished.

With Beagle Graphics, you can program and paint in double hi-res. Add to this dual ability the excellent utilities and charts, and you have a complete graphics package.

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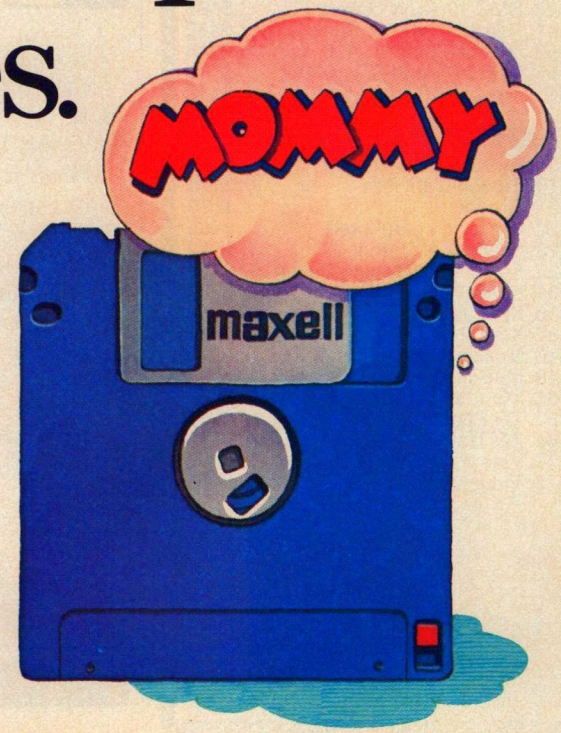

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AD #85a

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CIRCLE 192 ON READER SERVICE CARD

Painter is an excellent program for people who want to create a series of double-hi-res pictures that fit on one disk. This package is a specialized one that will not replace a regular drawing/painting package such as Beagle Graphics, but it allows you to get effects that are not possible with other packages. I highly recommend it.

Upcoming Coverage

I have taken a look at a prerelease copy of Dazzle Draw, a new double-hi-res-graphics program from Brøderbund. It is dazzling! Watch for a review in an upcoming issue. ✚

Roberta Schwartz is a free-lance computer-graphics artist. She teaches at The New School in New York City and is currently coauthoring a book on Apple computer graphics. She shares her apartment with a dog, a cat, an Apple II Plus, an Apple IIc, and a Macintosh.

▶ THE AMPERSAND IN APPLESOFT

The ampersand (&) is a unique Applesoft command that causes Applesoft to jump to a user-defined machine-language subroutine whose address is stored in locations $3F5–3F6 (hexidecimal).

Under normal conditions, there is a return instruction in this location, and nothing happens. When you install a program such as Cat Graphics (with the BRUN command), however, the ampersand takes on a different meaning, depending on the arguments you send it. For example, &RES,0 places you in the Double Hi-Res mode, and &CIRCLE,50,50,50 draws a circle at x,y coordinates 50,50 with a radius of 50. (See the Applesoft manual for more information.)

▶ PRODUCT INFORMATION

Cat Graphics
By David Shapiro
Penguin Software
P.O. Box 311
Geneva, IL 60134
(312) 232-1984
List Price: $34.95
CIRCLE 515 ON READER SERVICE CARD

HGR6
By John Ridges
ALF Products, Inc.
1315F Nelson Street
Denver, CO 80215
(303) 234-0871
List Price: $49.95
CIRCLE 516 ON READER SERVICE CARD

Doublestuff
By Louis Bonfiglio and
Peter Joselow
Doublestuff Plus
By Louis Bonfiglio
Doublestuff Software, Inc.
2053 West 11th Street
Brooklyn, NY 11223
(718) 449-6300
List Price: Doublestuff, $39.95; Doublestuff Plus, $69.95 (includes Doublestuff)
CIRCLE 517 ON READER SERVICE CARD

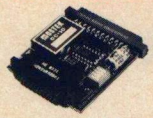
Beagle Graphics
By Mark Simonsen
Beagle Bros. Micro Software, Inc.
3990 Old Town Avenue
Suite 102C
San Diego, CA 92110
(800) 227-3800, ext. 1607
List Price: $59.95
CIRCLE 518 ON READER SERVICE CARD

The Graphics Magician Picture Painter
By Mark Pelczarski and
Steven Meuse
Penguin Software
P.O. Box 311
Geneva, IL 60134
(312) 232-1984
List Price: $59.95
CIRCLE 519 ON READER SERVICE CARD

All software above requires an Apple IIe (with Rev. B motherboard and Extended 80-column card with jumper installed), or an Apple IIc.

Commodore® Accessories

RS232 ADAPTER FOR VIC-20 AND COMMODORE 64



The JE232CM allows connection of standard serial RS232 printers, modems, etc. to your VIC-20 and C-64. A 4-pole switch allows the inversion of the 4 control lines. Complete installation and operation instructions included.

• Plugs into User Port • Provides Standard RS232 signal levels • Uses 6 signals (Transmit, Receive, Clear to Send, Request to Send, Data Terminal Ready, Data Set Ready).

JE232CM $39.95

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JE520CM	For Commodore 64 & VIC-20	$114.95
JE520AP	For Apple II, II+, and IIe	$149.95

Computer Memory Expansion Kits

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IBM64K (Nine 200ns 64K RAMs). $43.95

COMPAQ • COLUMBIA • EAGLE

These PC compatibles and others use the IBM64K for memory expansion.

IBM64K (Nine 200ns 64K RAMs). $43.95

APPLE *IIe*

Extended 80-Column/64K RAM Card. Expands memory by 64K to give 128K when used with programs like VisiCalc™. Fully assembled and tested.

JE864. . . . . $99.95

TRS-80 MODEL I, III

Each Kit comes complete with eight MM5290 (UPD416/4116) 16K Dynamic RAMs and documentation for conversion. Model 1: 16K equipped with Expansion Interface can be expanded to 48K with 2 Kits. Model III: Can be expanded from 16K to 48K using 2 Kits. Each Kit will expand computer by 16K increments.

TRS-16K3 200ns (Model III). $8.95
TRS-16K4 250ns (Model 1). $6.95

TRS-80 MODEL IV

Easy to install Kit comes complete with 8 ea. 4164N-20 (200ns) 64K Dynamic RAMs & conversion documentation.

TRS-64K-2 (Converts from 16K to 64K). $38.95
TRS-64K-2PAL (8 ea. 4164 w/Special PAL Chip to expand from 64K to 128K). . . $59.95

TRS-80 COLOR AND COLOR II

Easy to install Kit comes complete with 8 each 4164N-20 (200ns) 64K Dynamic RAMs and documentation for conversion. Converts TRS-80 Color Computers with D, E, ET, F and NC circuit boards to 32K. Also converts TRS-80 Color Computer II to 64K. Flex DOS or OS-9 required to utilize full 64K RAM on all computers.

TRS-64K-2. . . . . $38.95

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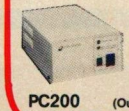

Provides up to 30 minutes of continuous 120 VAC 60Hz power to your computer system (load dependent) when you have a black out or voltage sag • Six month warranty • Weight (PC200): 24 lbs. – (XT300): 37.5 lbs.

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PM1200BS	IBM PC & Comp. Int. Unit w/ProCom Software.	$319.95
MAC PAC	Macintosh Package. (Includes PM1200, Cable, & ProCom Software)	$399.95

OPTIONS FOR ProModem 1200

PM-COM	(ProCom Communication Software). Please specify Operating System.	$79.95
PM-OP	(Options Processor).	$79.95
PMO-16K	(Options Processor Memory – 16K).	$10.95
PMO-32K	(Options Processor Memory – 32K).	$20.95
PMO-64K	(Options Processor Memory – 64K).	$39.95
PM-ALP	(Alphanumeric Display).	$79.95
PM-CC	(Apple IIc to PM1200 Cable).	$29.95
PM-MC	(Macintosh to PM1200 Cable).	$29.95

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13⅛"L x 4¼"W x ¾"H

Mitsumi 54-Key Unencoded All-Purpose Keyboard

• SPST keyswitches • 20 pin ribbon cable connection • Low profile keys • Features: cursor controls, control, caps (lock), function, enter and shift keys • Color (keycaps): grey • Wt.: 1 lb. • Pinout included

KB54. . . . . $14.95

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16-9/16"L x 6⅜"W x 1⅝"H

76-Key Serial ASCII Keyboard

• Simple serial interface • SPST mechanical switching • Operates in upper and lower case • Five user function keys: F1-F5 • Six finger edge card connection • Color (keys): tan • Weight: 2 lbs. • Data incl.

KB76. . . . . $29.95

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NEW!

Apple Keyboard and Case for Apple II and II+

• Keyboard: Direct connection with 16-pin ribbon connector • 26 special functions • Size: 14½"L x 5½"W x 1½"H

• Case: Accommodates KB-A68 • Pop-up lid for easy access • Size: 15½"W x 18"D x 4¼"H

Part No.	Description	Price
KB-EA1	Keyboard and Case (pictured above).	$134.95
KB-A68	68-Key Apple Keyboard only.	$ 79.95
EAEC-1	Expanded Apple Enclosure Case only.	$ 59.95

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TRANSACTION TECHNOLOGY, INC. 5VDC @ 1 AMP Regulated Power Supply

• Output: +5VDC @ 1.0 amp (also +30VDC regulated) • Input: 115VAC, 60 Hz • Two-tone (black/beige) self-enclosed case • 6 foot, 3-conductor black power cord • Size: 6½" L x 7" W x 2¼" H • Weight: 3 lbs.

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• Input: 105-125/210-250 VAC at 47-63 Hz • Line regulation: ±0.05% • Three mounting surfaces • Overvoltage protection • UL recognized • CSA certified

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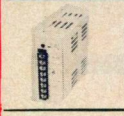
• Perfect for computer systems • Output: +5VDC @ 11 Amps, −5VDC @ 1 Amp, +12VDC @ 2 Amps, −12VDC @ 0.5 Amp and +24VDC @ 3 Amps • Overvoltage protection • Size: 12⅝"L x 6⅝"W x 4⅝"H • Weight: 17 lbs. • Spec incl.

PS2922. . . . . $69.95



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FCS-604A. $69.95

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• Can drive four floppy disk drives and up to eight expansion cards • Short circuit and overload protection • Fits inside Apple computer • Fully regulated +5V @ 5A, +12V @ 1.5A, -5V @ .5A, -12V @ .5A • Direct plug-in power cord included • Size: 9⅞"L x 3½"W x 2¼"H • Weight: 2 lbs.

KHP4007 (SPS-109). $59.95

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5¼" APPLE™ Direct Plug-In Compatible Disk Drive and Controller Card

The ADD-514 Disk Drive uses Shugart SA390 mechanics—143K formatted storage • 35 tracks • Compatible with Apple Controller & ACC-1 Controller • The drive comes complete with connector and cable — just plug into your disk controller card • Size: 6"L x 3½"W x 8-9/16"D • Weight: 4½ lbs.

ADD-514 (Disk Drive). $169.95
ACC-1 (Controller Card). . . . . $ 49.95

More Apple Compatible Add-Ons...

APF-1	(Cooling Fan).	$39.95
KHP4007	(Switching Power Supply).	$59.95
JE614	(Numeric/Aux. Keypad for *IIe*).	$59.95
KB-A68	(Keyboard w/Keypad for II & II+).	$79.95
MON-12G	(12" Green Monitor for II,II+, *IIe*, IIc).	$99.95
JE864	(80 Col. +64K RAM for *IIe*).	$99.95
ADD-12	(5¼" Half-Height Disk Drive).	$179.95

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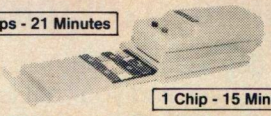
RFD480	(Remex 5¼" full-ht.).	$129.95
JA551-2	(Panasonic 5¼" half-ht.).	$139.95
TM100-2	(Tandon 5¼" full-ht.).	$159.95
FD55B	(Teac 5¼" half-ht.).	$149.95
SA455	(Shugart 5¼" half-ht.).	$159.95
FDD100-8	(Siemens 8" full-ht.).	$139.95
PCK-5	(5¼" Power Cable Kit).	$2.95
PCK-8	(8" Power Cable Kit).	$3.95

UV-EPROM Eraser

8 Chips - 21 Minutes



1 Chip - 15 Minutes

Erases all EPROMs. Erases up to 8 chips within 21 minutes (1 chip in 15 minutes). Maintains constant exposure distance of one inch. Special conductive foam liner eliminates static build-up. Built-in safety lock to prevent UV exposure. Compact — only 9.00"L x 3.70"W x 2.60"H. Complete with holding tray for 8 chips.

DE-4 UV-EPROM Eraser. $74.95
UVS-11EL Replacement Bulb. $16.95

NEW! Software & Documentation for CP/M Computers

JE664 EPROM PROGRAMMER 8K to 64K EPROMS — 24 & 28 Pin Packages

Completely Self-Contained — Requires No Additional Systems for Operation

• Programs and validates EPROMs • Checks for properly erased EPROMs • Emulates PROMs or EPROMs • RS232C Computer Interface for editing and program loading • Loads data into RAM by keyboard • Changes data in RAM by keyboard • Loads RAM from an EPROM • Compares EPROMs for content differences • Copies EPROMs • Power Input: 115VAC, 60Hz, less than 10W power consumption • Enclosure: Color-coordinated, light tan panels with molded end pieces in mocha brown • Size: 15⅝"L x 8¾"D x 3½"H • Weight: 5¾ lbs.

The JE664 EPROM Programmer emulates and programs various 8-Bit Word EPROMs from 8K to 64K-Bit memory capacity. Data can be entered into the JE664's internal 8K x 8-Bit RAM in three ways: (1) from a ROM or EPROM; (2) from an external computer via the optional JE665 RS232C BUS; (3) from its panel keyboard. The JE664's RAMs may be accessed for emulation purposes from the panel's test socket to an external microprocessor. In programming and emulation, the JE664 allows for examination, change and validation of program content. The JE664's RAMs can be programmed quickly to all "1"s (or any value), allowing unused addresses in the EPROM to be programmed later without necessity of "UV" erasing. The JE664 displays DATA and ADDRESS in convenient hexadecimal (alphanumeric) format. A "DISPLAY EPROM DATA" button changes the DATA readout from RAM word to EPROM word and is displayed in both hexadecimal and binary code. The front panel features a convenient operating guide. The JE664 Programmer includes one JM16A Jumper Module (as listed below).

JE664-A EPROM Programmer. $995.00
Assembled & Tested (Includes JM16A Module)

JE665 — RS232C INTERFACE OPTION — The RS232C Interface Option implements computer access to the JE664's RAM. This allows the computer to manipulate, store and transfer EPROM data to and from the JE664. A sample program listing is supplied in MBASIC for CP/M computers. Documentation is provided to adapt the software to other computers with an RS232 port. 9600 Baud, 8-bit word, odd parity with 2 stop bits.

EPROM Programmer w/JE665 Option
JE664-ARS. $1195.00
Assembled & Tested (Includes JM16A Module)

EPROM JUMPER MODULES — The JE664's JUMPER MODULE (Personality Module) is a plug-in Module that pre-sets the JE664 for the proper programming pulses to the EPROM and configures the EPROM socket connections for that particular EPROM.

JE664 EPROM Jumper Mod. No.	EPROM	Programming Voltage	EPROM MANUFACTURER	PRICE
JM08A	2708	25V	AMD, Motorola, Nat., Intel, TI.	$14.95
JM16A	2716, TMS2516 (TI)	25V	Intel, Motorola, Nat., NEC, TI, AMD, Hitachi, Mostek.	$14.95
JM16B	TMS2716 (3-V's)	-5V, +5V, +12V	Motorola, TI.	$14.95
JM32A	TMS2532	25V	Motorola, TI, Hitachi, OKI.	$14.95
JM32B	2732	25V	AMD, Fujitsu, NEC, Hitachi, Intel, Mitsubishi, National.	$14.95
JM32C	2732A	21V	Fujitsu, Intel.	$14.95
JM64A	MCM6876A, MCM68L764	21V	Motorola.	$14.95
JM64B	2764	21V	Intel, Fairchild, OKI.	$14.95
JM64C	TMS2564	25V	TI.	$14.95

CIRCLE 279 ON READER SERVICE CARD

Quick.

How many plates can the Juggler juggle?

Chinese Juggler

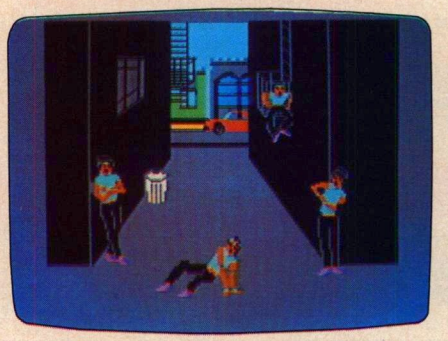
That depends on you. You are the Juggler and your act is the delicate art of plate spinning. Yours will be a tough act to follow if you succeed in matching colors and spinning plates on all 8 poles at the same time.

As your skill increases, so does the pace and the challenge of the game. You must act with speed and precision or the curtain will come down and your act will be all washed up!

Chinese Juggler is a refreshing departure from the usual shoot-em-ups and strategy games. It's fun, fast-paced and will delight players of any age. For Commodore 64. New from Creative Software.

$24.95

How do you moonwalk, snake and tut?



Break Street

You'll soon become a break dancing expert with our latest bestseller, Break Street. Now that combination of gymnastics, mime, funk, and just plain show-off, leaves the sidewalks and comes home to your Commodore 64.

Individual play guides you through the footwork of moonwalk, backspin, windmill, tut, and the rest of those sidewalk moves. Slow motion and lively musical accompaniment help you perform each move step by step. String together a whole series of moves and record them for future replay.

Catch the beat of the street with Break Street. For individual or team play. New from Creative Software.

$24.95

The answers are at your finger tips.

What's the capital of Alaska?

Roll Call USA

Do you know? Get ready to outwit your family and friends with Roll Call USA's fun facts on states,capitals and major industries.

Roll Call USA combines history and geography facts into a colorful question and answer game that challenges your knowledge of the 50 states, their capitals, major industries and statehood dates.

Feel confident? Drill yourself with a Flash Test. The game is speeded up, so think fast. Your answers are tallied up at the end for a final score.

Roll Call USA, a game of USA trivia for team or individual play. For Commodore 64. New from Creative Software.

$14.95

Call and order today! Use your Visa, MasterCard or personal check. Toll Free **1-800-331-7990** (outside California), **1-800-448-1001** (in California), or **1-408-745-1655.** MONEY BACK GUARANTEE. If not completely satisfied, return within 10 days for full refund.

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CIRCLE 151 ON READER SERVICE CARD

C R E A T I V E S O F T W A R E

230 East Caribbean Drive, Sunnyvale, CA 94089

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▶ SOFTWARE
BY LINDSAY MCGRATH

SOFTWARE ON A SHOE STRING

PUBLIC-DOMAIN SOFTWARE IS FREE FOR THE ASKING.

Let's face it, computing is expensive. Like most personal-computer owners, I got a loan to pay for my first system, an Apple IIe with a printer and one word-processing package. Planning my budget, I figured that after my new loan payment every month, I'd have just enough money left over to buy the electricity I needed to keep my Apple going. That didn't leave a lot of money for exploring the world of software. I kept the current flowing but soon found my computer needed more than power to perform all its miracles. It needed software, and lots of it.

That's when I discovered a constantly growing, easily accessible source of free programs—public-domain software. This software, which you can find at Apple users' groups, in libraries, and on electronic bulletin boards throughout the country, is free to anyone willing to spend the time and energy to seek it out.

Public-domain software can be a valuable resource for any Apple user. Just ask Bill Budge. When the creator of Raster Blaster and the Pinball Construction Set bought his first Apple II in 1978, he started using public-domain software. "I made $4000 that year and spent $2000 on my computer. I borrowed money from my dad," says Budge. "The only problem was, there was no software. Everything was public domain."

Budge started by using public-domain games and utilities and put them to good use. He put the Pinball Construction Set together with Ted/asm, a free assembler; and Apple users are circulating disks of games they've created with the Set in the public domain, a development that encourages the programmer.

The Right of Public Domain

Public-domain software has been around for a long time. It's accessible, but you probably won't find it in your local computer store; it's plentiful, but no one knows exactly how many free Apple programs exist. What is public-domain software? How do you find it, and what can you expect it to do for you? What about the quality? If someone writes a program and gives it away, can it really be any good?

"I think you get far more than you pay for with public-domain software. You pay on the order of 10¢ or 20¢ apiece for public-domain software, and it is probably the best value in the computer industry today," says Dick Hubert, president of CALL A.P.P.L.E., a 20,000-member Apple users' group based in Seattle. The group maintains a library of more than 300 disks of public-domain software for its members. "It is also one of the reasons that Apple computers are a very good buy, even though the Apple's price is high, compared to a lot of other things. There is a lot of public-domain software available."

When a piece of software is not copyrighted, it belongs to everyone, and no one exclusively. It is in the public domain. Copyrighted software can also be part of the public domain. Some programmers write software, copyright it, and then grant the public permission to copy and use it at no charge. They copyright the software to keep others from reselling it for profit. When you use public-domain software, you can copy it, change it, or incorporate part or all of it into one of your programs. You can even copyright any additions or revisions you make, but not the original public-domain program itself.

Occasionally, a manufacturer releases some software into the public domain if it is no longer profitable, but for the most part, public-domain software is written by computer users for other computer users. There are terrible and excellent programs in the public domain—and everything in between.

One thing all public-domain software has in common is that it's free. It's great for computer lovers with youngsters who regularly demand a fresh supply of games, programmers out to refine their techniques or find utilities,

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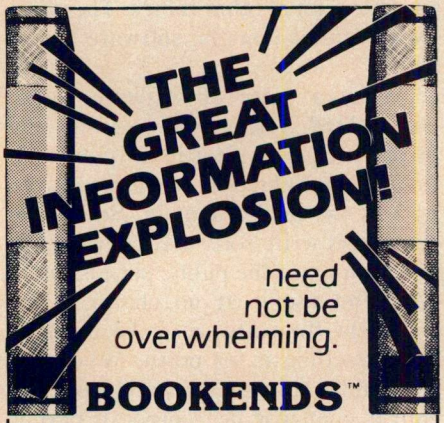

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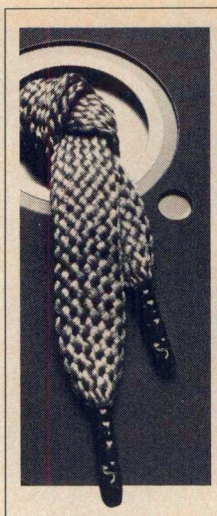


Apple users' groups exist all over the world, and most maintain libraries of public-domain software.

or people who want to explore all of the Apple's abilities without spending a lot of money.

Although the software itself is free, expect to spend a little money acquiring it. A users' group may require you to join before letting you loose in its library or charge you a fee for public-domain disks. The diskettes that contain the free software can cost from $3 to $10 apiece. If you gather public-domain gems from electronic bulletin-board services (BBS) with a modem, expect to spend significantly more on telephone charges. Bulletin boards with Apple software are springing up all over the country. If you live in San Francisco and feel compelled to download all the programs on a BBS in New York City, a cozy evening at the terminal could cost plenty. One Apple user spent so much money downloading programs from various systems that he finally swore off it and sold his modem.

You can keep the cost of acquiring public-domain software under control, though. The modest fees you may pay a users' group or library for this "free" software will keep those organizations alive and able to bring you more public-domain programs.

The best place to start your search for public-domain software is with users' groups. Apple users' groups exist all over the world, and most maintain libraries of public-domain software. Group sizes vary—the Washington, D.C., Apple Pie boasts 4000 members, while the Huge Apple Club of Simsbury, Connecticut, has 200—so you can join a large or small crowd of enthusiasts to share software and information about Apples.

To find out about users' groups in your area, talk to your local dealer or check out the phone book for pertinent information.

What if you don't have time to belong to a users' group but still want the support and public-domain software they offer? Don't despair. You're not alone. According to recent market research from the International Apple Core (IAC), an association of Apple users headquartered in Santa Clara, California, only 20% of all Apple purchasers join a users' organization. Users' groups are undergoing changes to try to reach the other 80%.

Until recently, the IAC functioned as a support organization for over 400 users' groups in the United States and 33 other nations. In that capacity, it reached about 60,000 users. To reach even more people, IAC began offering membership to individuals, too.

Now individuals can receive the same support IAC gives its users' groups, including access to a large library of public-domain software. Individual IAC memberships cost $30 annually. An additional $30 provides a member a six-month subscription to IAC's Disk of the Month (DOM). This service provides members with a new disk of IAC public-domain software each month. The DOM is available only to members.

"We've been changing," says Ken Silverman, IAC executive director. "Originally, our public-domain software or Disk of the Month was for one purpose. We'd get it to the member clubs so they'd have the chance to look at the program, tear it apart, play with it, and list it on the screen. Everybody was a hacker or a hobbyist," Silverman explains, adding that club members made improvements to public-domain software. "We don't have anybody doing that anymore, but now we've got better public-domain software, and we can say, 'Here is something you can actually use.' "

Members and nonmembers can take advantage of the large stock of public-domain software that IAC sells. Disks cost $8 for members and $10 for nonmembers.

Offerings for Apple II computers include Attach-BIOS, a software package donated to the public domain by Apple Computer for Pascal application writers. The package includes a step-by-step Applesoft tutorial; and a machine-language tutorial, including an editor.

One education disk has a program called Voice Print designed for the hearing-impaired. With a microphone connected to the Apple's cassette port, a user can generate graphic voice prints

on the screen, and the hearing-impaired person can practice enunciation by trying to reproduce the visual image.

IAC will soon begin marketing an Interrupt Pak that will allow users to change the ROM and put true interrupts in the Apple. The software, which used to be available commercially, was donated to the public domain by Southwestern Data Systems of Santee, California.

Available for the Apple III is a DOS-SOS converter, an RS-232 slot-selective driver that, in combination with an Apple II Super Serial Card, gives the III another serial port. Another popular public-domain program is File Cabinet III, a small database-management system that sorts, produces reports, and makes labels.

Recently, IAC introduced 3-PAKS, software packages with three disks of thematically grouped public-domain software. IAC currently offers Education, Logo, and Financial 3-PAKs at a price of $20 for members and $25 for nonmembers.

At these prices, public-domain software probably looks like a great deal. It is, but you pay a price, even beyond the expenses we've already looked at. When you buy public-domain software, you rarely get documentation or a guarantee that the software works correctly.

"We don't support public-domain software technically or in any other way. We do guarantee that the disk works, and we do guarantee that the software on it will run," says Silverman, "but we don't guarantee that any of the software will do what you think it does."

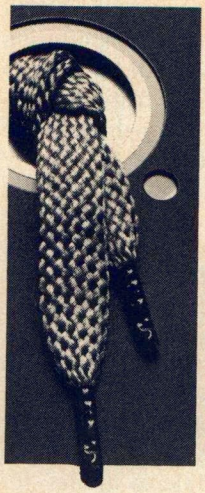
Although using public-domain software involves an element of risk, more and more people are trying it and enjoying what they find.

"We've also had stores that buy the Disk of the Month and put it in their library; when customers come in, they say, 'If you buy this Apple today, you can have access to a copy of anything in that library for free.' We think that's great."

Software Libraries and Exchanges

If you're the kind of person who likes to go to the library and leaf through the newest releases, keep your eyes open. You may be able to browse through mystery novels *and* public-domain software during your next visit.

Libraries throughout the U.S. are collecting public-domain programs and offering them to their patrons. In many areas you can copy programs at a library, take them out to use on your own



Libraries throughout the U.S. are collecting public-domain programs and offering them to their patrons.

computer, or order them by mail.

"There is a great demand for public-access software," says Patrick Dewey, librarian in charge of the Chicago Public Library's collection of Apple software. The software is available at no cost to anyone who wants to copy it at the library. "People will come in and typically copy all 50 diskettes. It doesn't seem to make much difference what it is; they'll just copy it all."

The North Central Regional Library, a rural library in central Washington State serving 150,000 people in five counties, maintains a library of 2500 Apple public-domain programs. The library district, which serves much of the state's rural population, offers the software through a mail-order service center in Wenatchee.

North Central was one of the first rural libraries in the U.S. to replace bookmobiles with direct-mail library service. "We became the Sears Roebuck of libraries," says Dean Marney, director of mail services. "It was immediately successful and allowed us to serve rural pockets."

The library began offering public-domain software by mail at the suggestion of a computer consultant who installed an Apple at the center. The collection is now one of the library's most popular attractions.

The North Central Regional Library is considering setting up an electronic database of public-domain software. Creating a public-domain-software library, says Marney, has been an education for library employees and patrons alike.

"When we started the software service, I had to send a note out to the branches telling them what we were doing, and one of the branch librarians called up and asked, 'Is this anything like Tupperware?' She was very upset.

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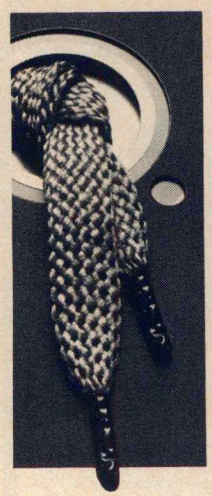

Software exchanges are another valuable resource for public-domain-software enthusiasts.

She didn't know what software was," he says.

Software exchanges like Softswap in San Mateo, California, are another valuable resource for public-domain-software enthusiasts. These organizations exist only to distribute software. No meetings, dues, or membership are required.

Softswap, a part of the San Mateo County Office of Education, is a software exchange for educators. The group distributes instructional software for a variety of microcomputers, including 150 programs for the Apple.

Although bound by law to serve the county's educators and public first, this educational foundation does welcome others into its office to copy disks of software, by appointment. Visitors can come to the center and copy programs onto their own disks, can order disks by mail, or can contribute an original program and receive any diskette from the center's catalog, in trade.

California educators need not travel to San Mateo to copy Softswap's disks. The collection has been distributed to 15 other County Offices of Education throughout the state.

Selling the Software

Some people have taken it upon themselves to assemble libraries of public-domain software and make them available to the public. The Apple Avocation Alliance of Cheyenne, Wyoming, manages one such library.

AAA isn't a group of hackers, madly writing games. It's one person, Ron Maleika. Maleika bought an Apple II Plus in 1980, began using public-domain software, and decided it would be fun to trade with other users. He asked a friend with a CB radio to spread the word.

Maleika received so much software that he decided to organize a library for users. He edited programs, arranged them by subject, and began offering disks at cost to those with nothing to trade. Today, the AAA features a library of 217 public-domain disks full of programs for Apple users.

"A lot of this stuff is quite good; a lot of it is mediocre, but all of it is valuable for people who want to learn to use their Apple," says Maleika.

The most popular software AAA offers is the Eamon Adventure series, a text adventure said to rival Dungeons and Dragons. AAA disks are available for $3 apiece ($2.47 apiece if you order ten or more disks). A library catalog is available for $2. Maleika trades for new programs and gives a free disk to any user who takes a disk and improves its programs.

In December 1982, Maleika opened a store, 3A Computer Products, to sell products for a variety of computers, including the Apple. The people depending on Maleika for software advice began to want his help buying monitors, other peripherals, and commercial software.

Freeloader Library

The American Software Publishing Company offers Apple users the Freeloader 500 Library, a collection of over 3800 programs for the Apple. Arranged by subject, the whole library costs $600.

Of course, you don't have to buy the entire collection. It is divided into nine subject binders: Business and Finance, Utilities, Graphics and Sound, Education, Home, Games, Adventures, Pascal, and CP/M. Individual binders are available for $75 apiece. A free catalog detailing all the library's programs and the club is available.

The Freeloader collection features all kinds of software, from a label maker for the Epson printer and a Morse code practice program, to sacred software. Although the quality of the public-domain software varies, says Sheryl Nutting, president of the company, it's an essential resource for people who want to learn more about using and programming their Apples.

Bulletin Boards

If you're willing to invest in a modem and some long-distance phone calls, you can download public-domain software from many computer bulletin boards across the country. Unlike services such as The Source or CompuServe, bulletin boards charge you nothing.

Bulletin boards are usually run by individuals or groups with a specific in-

Some people have taken it upon themselves to assemble libraries of public-domain software.

terest, such as dating, computer music, science fiction, programming in a specific language, or using a special operating system. Many of them offer public-domain programs. One of the best ways to find out about electronic bulletin boards is to call the People's Message System in Santee, California, at (619) 561-7277. This bulletin board maintains a list of over 600 bulletin boards currently in operation. Boards tend to come and go, so the list is updated regularly.

Some bulletin boards do last, though. The Computer Systems of Marin BBS, (415) 383-0473, in Marin County, California, offers Apple users a variety of public-domain CP/M programs.

The bulletin board, which has been in operation for four years, is available from 5 P.M. to 8:30 A.M. Pacific Time on weekdays and 24 hours a day on weekends. It is based in a retail store, Computer Systems of Marin. Jim Ayers, the store's owner and system operator, is an Apple owner and head of a CP/M users' group that meets in the store twice a month.

The group maintains a library of CP/M public-domain software that includes 170 disks specially reformatted for Apples; some of the software is available on the bulletin board. You can purchase diskettes with the programs directly from the group.

CP/M is a sophisticated operating system, says Ayers, and the public-domain software developed under it is of very good quality.

"I got an Apple and one of the early Microsoft Z80 cards, because I was used to CP/M and wanted to convert some of the programs that were available over to the Apple. I seldom use DOS on the Apple," he says.

The bulletin board averages 18 calls a

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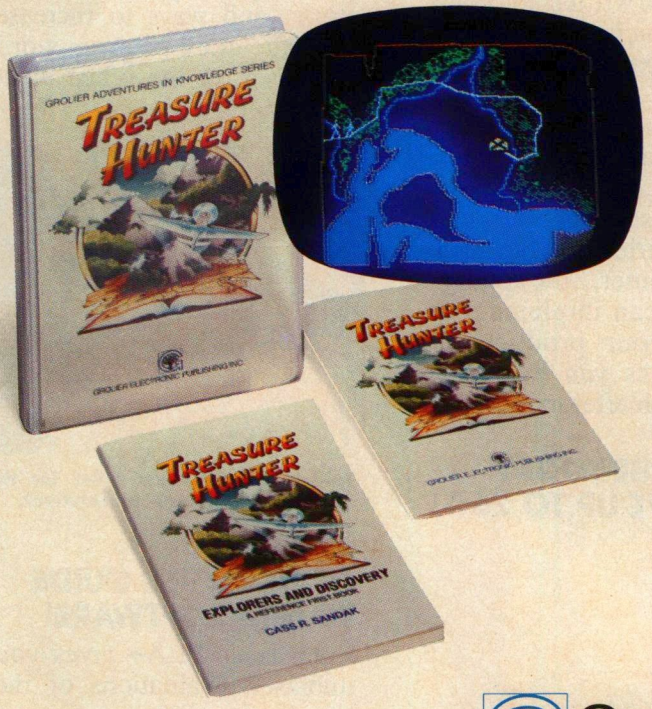

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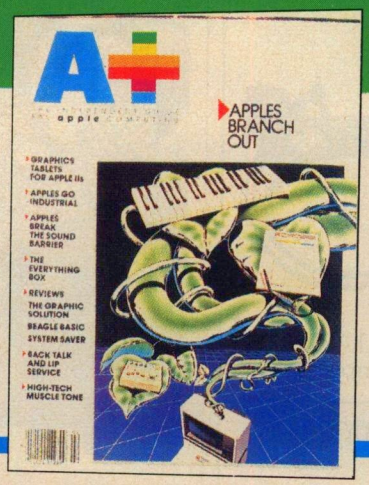

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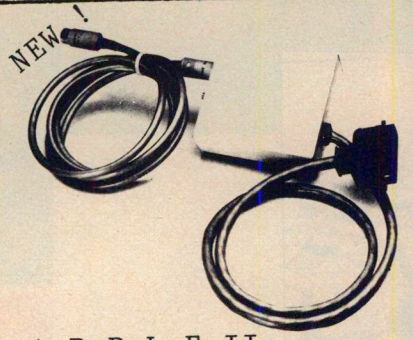

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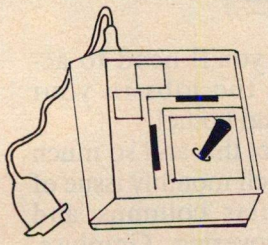

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Once you start, chances are you'll never stop exploring the world of public-domain software.

day from such far-flung places as Texas, Florida, and New York. The users' group maintains a library that includes some popular programs such as ZCPR.COM, a Z80 overlay for the CP/M operating system, and DU.COM, a popular and flexible disk utility.

Ayers encourages callers to contribute programs but says 90% of all activity on the system is downloading (copying programs from the bulletin board). "These bulletin-board systems are not only for downloading; they're also for uploading" (sending programs to the bulletin board).

Another bulletin board of interest to Apple users is the International Apple Core's People's Message System, (312) 295-6926, located in the Chicago area. The bulletin board allows callers to leave and retrieve messages, download and upload programs, and more.

No End in Sight

Once you start, chances are you'll never stop exploring the world of public-domain software. Using it is a great way to learn about all your Apple's capabilities without spending a lot of money.

The production of public-domain software doesn't seem to be slowing down, either. As long as programmers who love to work on Apple computers share their work with others, there will always be more public-domain software for you to explore.

"There's a fellow here in San Francisco, Dan Dugan, who released a database program to me on his 39th birthday. It was his present to the computing community," says Ayers. "That's the way most of this stuff was developed." +

Lindsay McGrath is a San Francisco-based free-lance writer who contributes to various national publications.

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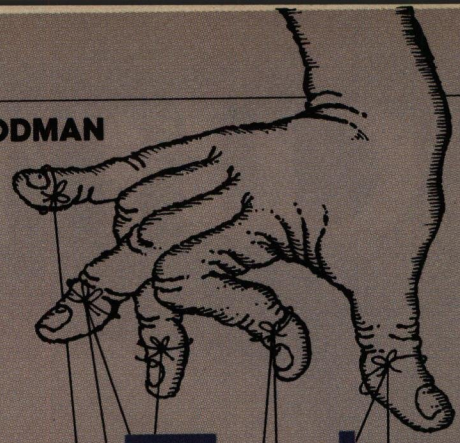
▶ SOFTWARE/BY DANNY GOODMAN



MULTIPURPOSE SOFTWARE PROGRAMS TAKE CENTER STAGE

Trying out integrated software

I am holding auditions for a very demanding role on the Apple IIc stage. The winner must offer the versatility of three or more productivity applications without making me switch program disks to get to each of them; allow me to swap information among the applications at will and with the least fuss; make easy the operation of the entire system by employing a consistent command structure among all the applications; and demonstrate that each module of the program can stand alone as a legitimate productivity tool, since not all of my work requires moving information around. In other words, the program that gets the part will have to turn in the most convincing performance as an integrated software package. I'm providing all the props—an Apple IIc; a second disk drive; and a mouse, if needed.

Three aspiring programs are here for the tryout. One, the Magic Office System by Artsci, offers its interpretation of a word-processing/spelling-checker/spreadsheet/graphics combination. The other two—Apple Computer Inc.'s AppleWorks and Arktronics' Jane—demonstrate their abilities to combine word processing, financial modeling (spreadsheet), and database (file) management into a single environment. Let's see how they perform.

STEPHEN OSBORN

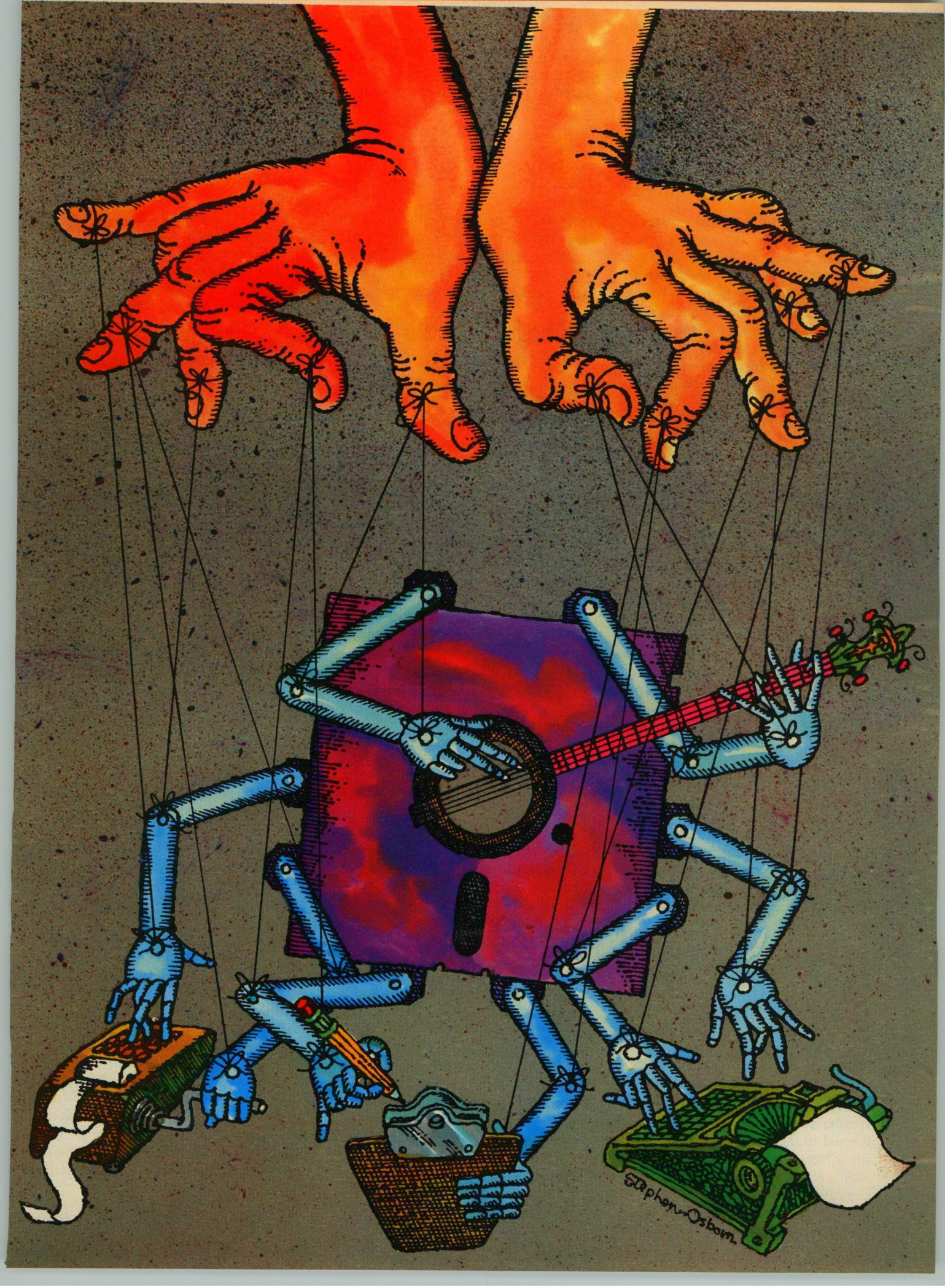
Magic File Drawers

Magic Office's conceptual environment is a file-drawer metaphor. When you load the program, the screen displays a file drawer bearing the name of the program disk. Storage disks, each with a unique name you specify when you "create" a new storage disk, are displayed as other file drawers. The program refers to these drawer pictures on screen as *volumes*—the proper terminology for the filing structure on the disk, but ruinous to the metaphor. The display can accommodate one program disk and up to three storage volumes, but each displayed volume must have its own disk drive—possible only with Apple models other than the IIc.

To open a volume ("pulling out" a drawer on the screen) and the documents therein (documents look like file folders in the opened drawer), you use the arrow keys to place a highlighted marker over the desired name and press Enter. To start work on a new document, you must "tear off" a sheet from the word-processing, spreadsheet, or graphics "pads" on the storage disk by highlighting the pad name and pressing Enter. These pads and the spelling-checker dictionary must be manually copied from the program disk to the storage disk each time you create a new storage disk.

The word-processing module, called OfficeWrite, is Magic Office's weakest unit, and it includes a few bugs that prove frustrating. Although the information line at the top of the screen provides page, line, column, and free-space indications, it is easy to accidentally scroll the cursor above page 1, line 1, and throw off the page count. Second, if you fill up the document memory space—about ten pages—you reach a *Catch-22* mode in which an error condition won't let you scroll through the document or delete sections of it to make it more manageable. Your work becomes trapped on the disk.

Among the desirable word-processing features OfficeWrite lacks are multiple margin settings and other formats within a document (such as the ability to indent single-spaced quotations), automatic paragraph indentation, automatic reformatting if you insert or delete words (in fact, if you manually reformat more than one paragraph at a time, all end-of-paragraph and blank-line carriage returns are erased—linking the paragraphs together in one monster paragraph), block moves, and many others. Perhaps as a short (i.e., less than one page) memo processor, this module would be sufficient. But to call it word processing stretches it a bit.


Stephen Osborn

The spelling checker, however, operates quickly and efficiently. For checking standard, everyday words, the 14,000-word dictionary zips through a document, stopping when it doesn't find a match and allowing you to make an immediate correction or mark it for later correction.

Unfortunately, the marker that the program places at the word is an inverse @, which you cannot search for within OfficeWrite. Therefore, you must carefully scroll through a marked document looking for instances where that marker occurs. As the spelling checker encounters words it doesn't recognize, you can add them to your own dictionary. This user dictionary remains only on the current storage volume, however. When you fill that disk up and create a new volume, you'll have to stop and add the same old words to the new disk's dictionary when they're encountered in new documents.

Further annoyances include the fact that OfficeWrite doesn't use the Delete key as a backspace key. Instead, you must use the left-arrow key to retrace your steps. Finally, there is no on-screen help of any kind for the Control and open-apple-key commands. Artsci supplies a four-color reference card that I find confusing and incomplete, and the manual, which contains a good tutorial, lacks an index for finding answers to questions that come up later.

Magic Office's spreadsheet module, OfficeCalc, is clearly this program's strong point. It is a full-featured spreadsheet with powers similar to those of VisiCalc. The spreadsheet extends to 63 columns by 254 rows, an adequate size for Apple II use. The function library lists 28 @ functions, including Net Present Value, Pi, Round, and several conditional logic functions. Using slash commands (e.g., /A), familiar to spreadsheet users, you have access to most basic formatting and editing commands. You can set individual column widths, divide the screen into two windows, freeze titles in place, and replicate ranges of cells. About the only basic function missing is the ability automatically to center a label in a cell.

OfficeGraph, the graphics module, presents itself on screen initially as a smaller version of OfficeCalc. You are limited to the amount of data that can fill a 7-column by 23-row grid (but, as we'll see in a minute, this orientation can cause problems when you start integrating OfficeGraph and OfficeCalc). From the data in the minispreadsheet, OfficeGraph produces either a bar graph or pie chart, whichever you select. Once you've seen the graphic on the screen, you can print it out on a graphics printer. Graphics print inside a 3⅝×2⅝-inch box, which the Imagewriter places about 1½ inches off center on the page. Also, some extraneous characters consistently appear at the lower right corner of all graphics.

Integration of three major modules is not very elegant, because of the many menu steps involved. To transfer a piece

Magic Office's spreadsheet module, OfficeCalc, is clearly this program's strong point.

of a spreadsheet to a word-processing document or the graphics worksheet, you must first copy the desired section to a clipboard and return it to the main Magic Office file-drawer display (after saving the original file). Then you open the second document and paste the figures from the clipboard. You cannot, however, swap data between two different storage disks, which is, to me, a significant flaw.

The problem I mentioned earlier about going from OfficeCalc to OfficeGraph involves the traditional way most users set up monthly columns of figures, with the months extending along the top row of labels. Since OfficeGraph allows only 7 labels across the top, you can't copy monthly data like this from an OfficeCalc spreadsheet and immediately paste it into the OfficeGraph spreadsheet without restructuring the way you do your regular spreadsheets.

The more I work with Magic Office the less I feel that its modules are truly integrated. About the only keyboard commands they have in common are those involving cursor movement. Even the quick-reference cards for OfficeWrite and OfficeCalc (OfficeGraph has none) are separate formats and look as if they were originally designed for distinct programs and later merged into an environment with similar menus and cursor commands.

Thank you for coming, Magic Office System. Don't call us, we'll call you.

Mousing Around with Jane

The Xerox Star, the Lisa, and the Macintosh have spawned a genre of mouse-driven software that makes extensive use of screen icons to simplify the communication between user and computer. Jane employs such a scheme for the Apple II. In fact, a mouse is essential when you run Jane on the IIc; other Apple II computers require an AppleMouse II, KoalaPad, or joystick controller.

When you load the program, a row of icons appears across the top of the screen. These same icons appear for every step of the program, thus meeting an important criterion of consistent user interface. Additional icons, specific to a particular application, appear along the bottom of the screen while that program module is running. To select an icon, you use the mouse to move the on-screen pointer to the icon, and then you press the mouse button. You don't need quick-reference cards or memorization of commands, since everything is on the screen.

Every document in Jane appears in a screen window. As with Macintosh windows, you can adjust the size and location of a window on the screen. Moreover, you can have more than one window from more than one application on the screen at one time, although only one of the windows is active at any moment. But if you want to look at some spreadsheet figures while writing an analysis of them, you can have both the figures and your memo on the screen at once.

Unfortunately, the individual modules in Jane are not up to professional productivity quality. The Janewrite word-processing module, for example, is too slow to respond to the keystrokes of a moderately proficient typist. Characters are frequently lost when typing speed exceeds display speed. The version of Jane present at this audition does not support 80-column text, but a menu window opened from the terminal-configuration icon lets me change the character size to small in order to display 60 characters across the screen. Reformatting text after changing margins on the screen ruler or selecting a different justification must be done manually, and only one paragraph at a time, or else multiple paragraphs are unceremoniously condensed into one glob of sentences. Also, Janewrite limits your selection of text blocks for cutting and copying to only as much text as appears in a window at a given moment. This makes for cumbersome editing when you need to substantially rearrange a document.

Janecalc is likewise crippled, compared to other simple spreadsheet pro-

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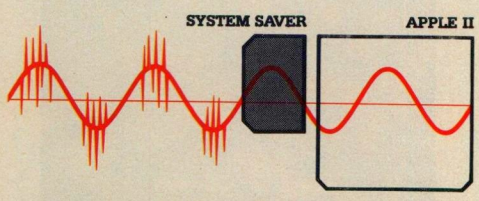

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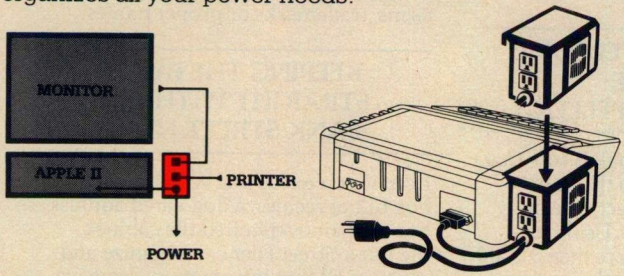

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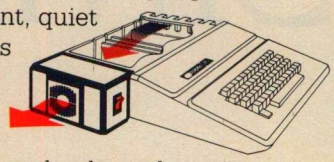

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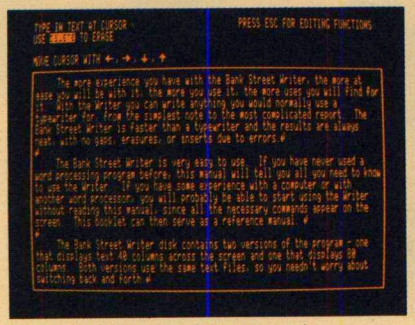

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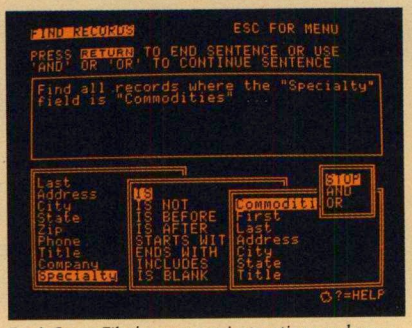
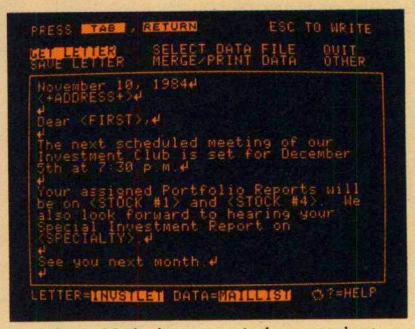


Bank Street Filer's on-screen instructions and easy menus simplify entering, organizing and sorting information.



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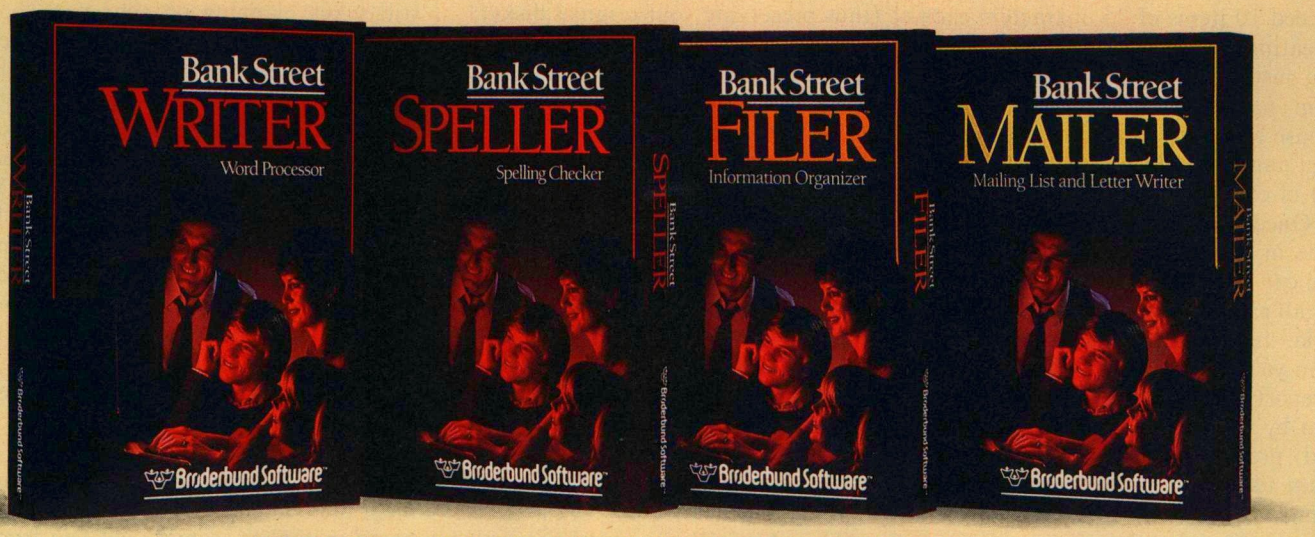

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grams. The Janecalc spreadsheet is only 20 rows by 24 columns—not something you're likely to use for a budget review for your boss. Scrolling around the small sheet with the mouse and easy-to-use scrolling arrows at the window edges is a s-l-o-w process. Screen writing time is snail-like. Entering labels takes an ergonomically inefficient movement of the mouse pointer to the desired cell before you type the label. Wherever you place the pointer is precisely where the first label character will appear.

Without an on-screen grid or cell cursor to help you locate the desired cell location, it's easy to get labels in the wrong cell. Editing cell entries is inconsistent with Janewrite editing, which admirably uses the Delete key as a backspace key.

Math functions for Janecalc are very few, but because you choose them with the mouse, they are probably the easiest to select and import of any spreadsheet I've seen. At the bottom of the Janecalc window is a list of the five preprogrammed functions—Sum, Average, Count, Minimum, and Maximum. You can also build cell formulas (formulas that depend on values in other cells) by pointing to arithmetic symbols on the bottom icon row and to the cells comprising the formula.

Janelist is the program's database-management module. As its name implies, it is best suited for keeping simple lists. Each record is the equivalent of an index card of information. Janelist offers two predefined list formats—a business and a personal mailing list—and a user-defined list, which cannot exceed 10 items of 25 characters each. Creating a customized list is easy, since you just fill in blanks for each of the item names you want and use the mouse to increase or decrease an adjacent number corresponding to the number of characters each item holds.

Once you set up your list form and type in information for several cards, you can search for a single card, search for all cards meeting several search criteria, and sort them according to any item you want. You can also customize a report and mailing-label printout format by pointing to item names in special prompt windows and dragging them to a miniaturized replica of the printed output. The mouse environment greatly simplifies the procedure.

It's too bad that Jane's modules are so constricted. The program's consistent icon and mouse interface and its ability to display documents from different modules simultaneously makes it easy to use and swap data, after going over the quick tutorial in the four-color manual. I'd be hard-pressed to put this program to work in a business environment, however. Depth and versatility seem to have been sacrificed for the sake of ease of use. In a home, where spreadsheet calculations aren't very complex and where word processing is used for little more than simple letters and an occasional book report, Jane may be acceptable. If you're used to more powerful, dedicated programs on the Apple or other computers, however, you'll feel that Jane is only a clever toy.

If you're used to more powerful, dedicated programs on the Apple, you'll feel that Jane is only a clever toy.

Thank you, Jane. Leave your number at the door.

The Works of AppleWorks

The last software package to audition is AppleWorks, a descendant of a program originally designed for the Apple III. It requires 128K RAM and, like the other two programs, works best with two disk drives. AppleWorks comes as a two-sided "flippy" diskette. One side contains a start-up routine, and the other side contains the various program modules for regular operation. You must copy the two sides onto blank disks before you can use the program (thus preserving your original disks).

AppleWorks' user environment is an on-screen file-folder metaphor, each folder containing either a menu or a list of files to choose from. Moreover, an invisible desktop contains as many documents as you can open at one time. Actually, this desktop is the available memory in the system—55 kilobytes. As you fill up the desktop with documents, the available memory decreases. This desktop arrangement allows you to have several documents on tap at any moment, only a couple of keystrokes away from the one you're in, regardless of which application they rely on—word processing, spreadsheet, or database management.

The AppleWorks word-processing module competes well against free-standing word-processing programs. A wide assortment of text-formatting and appearance features are available from a submenu, making possible elaborately formatted reports. Although it takes several keystrokes to achieve a particular function (for instance, pressing open-apple-O, BB, and Return to start boldface print), these sequences soon become second nature (just ask WordStar aficionados how easily this happens), and you ignore all the prompting that helps the beginner. Text is automatically, and instantly, reformatted when you make changes to the text or formatting instructions. Page breaks are clearly marked, but a document requires manual repagination when you enter or edit text.

Over on the spreadsheet module, the available commands and built-in math functions are similar to the VisiCalc level of program. A blank sheet is a rather larger 127 columns by 999 rows—plenty of room for even heavy-business spreadsheets, which link together several related spreadsheets on one large worksheet. Unlike other spreadsheets in this category, this one does not respond to slash commands. Rather, it adheres to the open-apple command structure of the other AppleWorks program modules, using a significant number of similar mnemonic commands, which make it relatively easy to master in a short time.

As with the other modules, a catalog of commands is available on help screens, which you can access by pressing open apple-?. One function I miss, however, is the ability to change the width of individual columns. The program makes up for it somewhat by automatically subdividing the text of long labels into multiple cells. But this still takes planning on your part, because you may later add a longer label that encroaches on an established column to the right.

The database section of AppleWorks is remarkably simple to use and is as flexible as Software Publishing's PFS filing programs. You can create a blank form into which you enter information, record after record. You can then select items from the forms to create customized on-screen and printed reports of your data. You also have the full range of sorting and searching capabilities you would expect from a database program.

Shifting information from one document to another involves using the clipboard metaphor (copy or cut text from one document to the clipboard, bring the second document to the screen, and paste the text into it). Having several documents in memory at once speeds

the procedure, since each document is only a couple of keystrokes distant from another.

AppleWorks is the only one of the three integrated programs present at this audition that seems to pay attention to the real world of computing—a world in which you want to see how much space is left on your storage disk before you embark on a project, and one in which you may want to take spreadsheet data and use it with a graphics program from another supplier. AppleWorks lets you load and store information in the Data Interchange Format (DIF), which many other programs recognize. Thus, you could convert a VisiCalc spreadsheet (stored as a DIF file) to an AppleWorks spreadsheet. Or you could graph data from an AppleWorks spreadsheet on VisiPlot or other graphics program that accepts DIF files.

Word-processing texts can be stored as straight ASCII files for transmission by a modem. It is also the only program to come with a separate tutorial manual. The reference manual is superb, offering graphic representations of the data-transfer capabilities of the program.

In an era of integrated software, when it is commonplace to see one module shine above others, it is refreshing to see a program such as AppleWorks whose individual modules function well on their own yet share a common command structure and a simple way of shifting information around, even to different storage disks.

AppleWorks, the part is yours. Be here at 8 A.M. tomorrow for rehearsal. ✚

Danny Goodman is the author of the best-selling book Going Places with the New Apple IIc *(Simon & Schuster/Pocket Books) and several other computer books. His articles on electronics and computers appear in many computer and general-interest magazines, and he appears frequently as commentator and product reviewer on the PBS-TV series "The New Tech Times."*

▶ PRODUCT INFORMATION

Magic Office System
Artsci, Inc.
5547 Satsuma Avenue
North Hollywood, CA 91601
(818) 985-2922
List Price: $295
Requires: Apple II Plus, IIe, or IIc; 64K RAM; 80-Column Text Card; two disk drives
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AppleWorks
Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010
List Price: $250
Requires: Apple IIe 64K RAM, 80-Column Text Card, one disk drive, Extended 80-Column Text Card (additional 64K RAM) recommended; or Apple IIc
CIRCLE 526 ON READER SERVICE CARD

Jane Integrated Software Package
Arktronics Corporation
113 South Fourth Avenue
Ann Arbor, MI 48104
(313) 769-7253
List Price: $125; $195, with Jane mouse and mouse-controller card
Requires: Apple II, II Plus, IIe, or IIc; 64K RAM; one disk drive; Apple II, II Plus, and IIe require and Apple-Mouse (or Jane mouse) and mouse-controller card, KoalaPad, or joystick; the IIc does not use the Jane mouse
CIRCLE 527 ON READER SERVICE CARD

TELEMAX, INC. ENHANCEMENT PRODUCTS

WE turn Apples and Franklins into gold, with a little alchemy and lots of engineering.

RGB COLOR BOARDS

Apple 11, 11+, 11e; Franklin ACE 1000, 1200, 100 (color or monochrome)

The Color Master VCB-8

The new video board that provides RGB (red/green/blue) video signals for crisp, vivid displays of color graphics and text, with exceptional resolution and color quality, is now available.

Can be used with 80 column text, so both color graphics and text are displayed on **one** RGB monitor. **Text can be displayed in anyone of 8 colors, software selectable.** A text **mode enhancement circuit improves resolution and readibility.** Board plugs into **slot 7** and comes with 4' cable for signal output. **Optional monitor connector,** wired to cable is available (specify RGB monitor make and model).

For the Apple 11 or 11+, the optional **VSS-80 softswitch or VSP-80 switchplate** can be used to interface **Videx Videoterm** or **Ultraterm** or other similar boards. For **Franklin** computers, the **VSP-80** is available to implement this feature.

The Kaleidoscope VCB-24

Has the same specs. as the COLOR MASTER, with the following added features:

Each text line of 24 lines of text can be independently set to any one of 8 colors, on any one of 8 colors of background. Software provided.

Signal output: RED, GREEN, BLUE, Sync., both composite and H&V. Levels are TTL, both + and −; other outputs: ± 5VDC, +12 VDC. Signals are American Standard. European version is available. Universal RGB monitor compatibility.

ORDERING INFORMATION: (board model nos.)

APPLE	11, 11+	11e	Price
ColorMaster	VCB-8+	VCB-8e	$139.00
Softswitch	VSS-80	don't need	45.00
SwitchPlate	VSP-80	don't need	30.00
Kaleidoscope	VCB-24+	VCB-24E	199.00
FRANKLIN	**Ace 1000, 1200 (rev. B)**	***Monochrome Ace 1000,100**	**Price**
ColorMaster	VCB8-EF		$169.00
ColorMaster		VCB-8F	139.00
Kaleidoscope	VCB-24EF	VCB-24F	219.00
SwitchPlate	VSP-80	VSP-80	30.00

(*earlier models that did not have color)

Monitor connector, wired to cable: $20.00

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TELEMAX IO, Input/Output Card

Gives user access to the following:
1) Four 8 bit input or output ports (total 32 lines of I/O)
2) Two handshake lines for each port (total 8 lines)
3) Four powerful 16 bit timers, real time or stopwatch.
4) Two shift registers
5) Card may be used in any slot from 1 to 7
6) Suitable for robotics or other control of external equipment. TIO-8 **$169.00**

TELEMAX Rom/Ram Card

Provides up to 32K of either ROM or RAM storage; user can install CMOS RAM for data or program storage; data can be maintained for 2 years with on-board battery backup. Programs stored in RAM or ROM can be used with other programs. Has 8 bit I/O port for accessing external circuitry. TRR-32 **$199.00**

IC Tester Interface card.
MOD. ICT-2. Tests 14, 16, 18, 20 pin devices, Displays results on video monitor. Card plugs into any slot. Comes with test socket, software diskette, instructions. **$169.00**

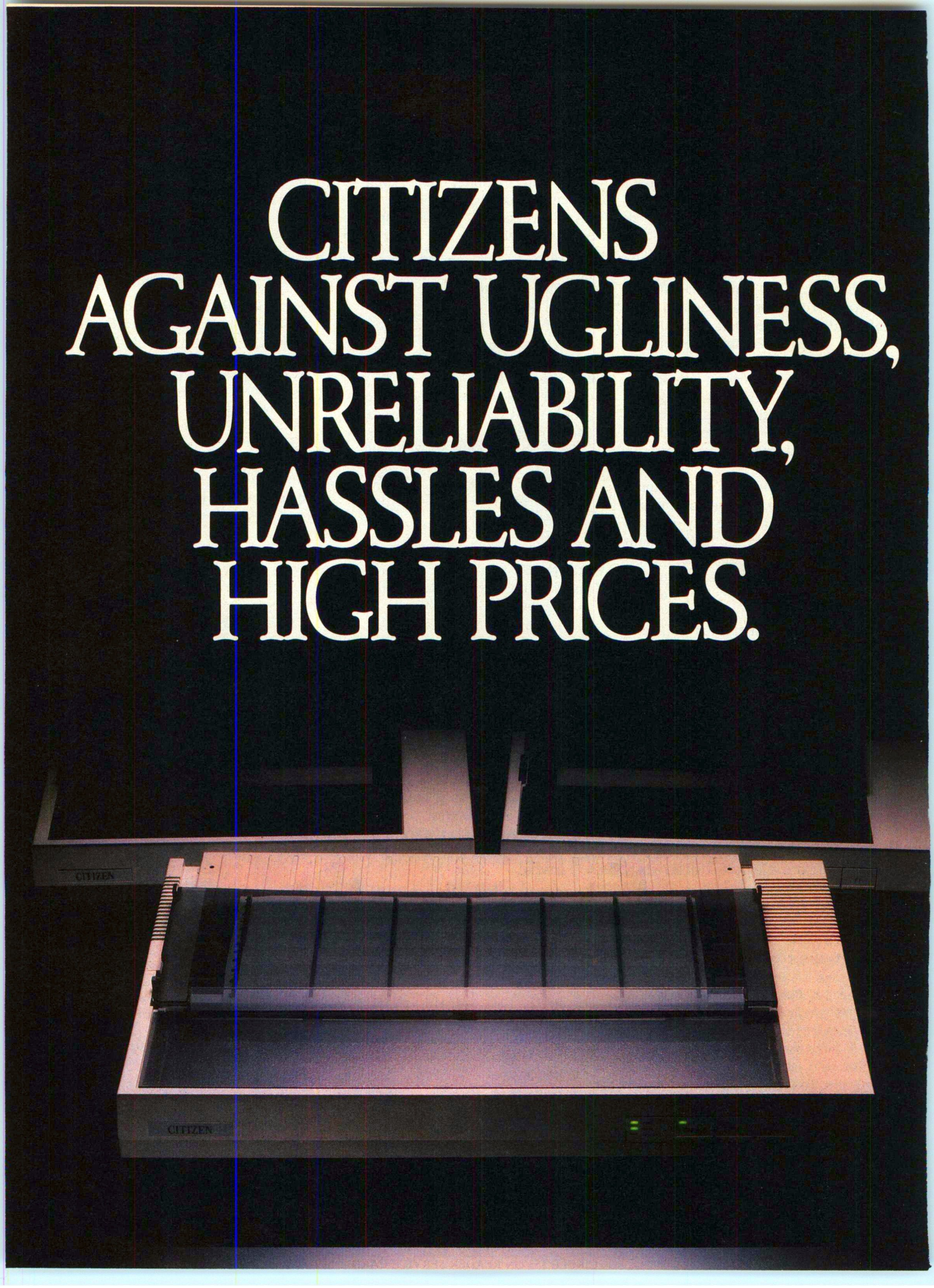
Subject to change without notice.

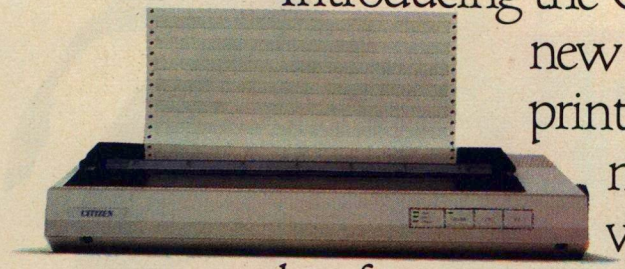
For further information contact your computer dealer/distributor or:

TELEMAX, INC.
Computer and Video Products
P.O. Box 339
Warrington, PA 18976
(215) 343-3000

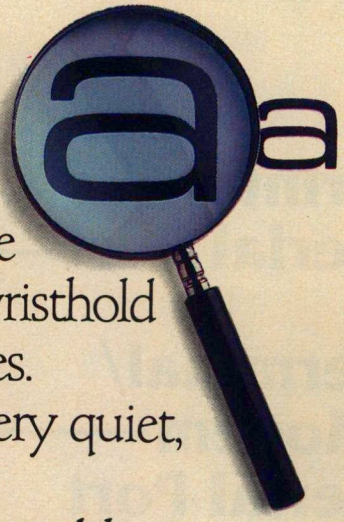
CIRCLE 353 ON READER SERVICE CARD

CITIZENS AGAINST UGLINESS, UNRELIABILITY, HASSLES AND HIGH PRICES.





Introducing the Citizens. A whole new line of dot matrix printers, precision-engineered by the people who've become a wristhold word in fine, precision-engineered watches.



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They're also exceptionally easy to use, thanks to our unique new push-feed paper loading system.

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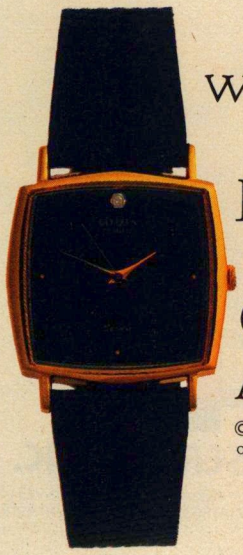

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For more information, call 1-800-556-1234, Ext. 34. In California, 1-800-441-2345, Ext. 34. Or write Citizen America Corporation, 2501 Colorado Avenue, Santa Monica, CA 90404.

CITIZEN

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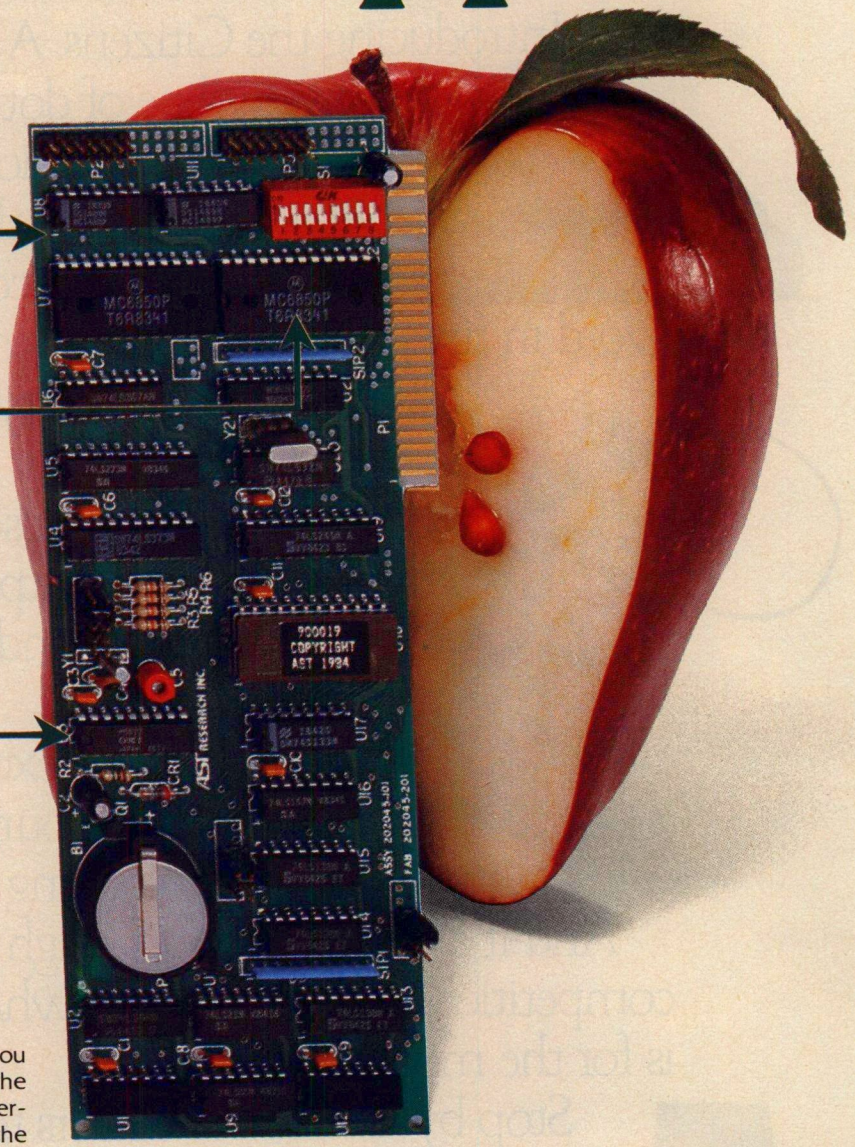
CIRCLE 221 ON READER SERVICE CARD

AST's into Apples!

Printer Serial Port

Terminal/ Modem Serial Port

Clock Calendar



At AST, we are consistently thinking of ways to help you get the most out of your personal computer. We set the standard with enhancement products for the IBM Personal Computer, and now we are striving to do the same for Apple™ computers.

Introducing Multi I/O,™ the most comprehensive enhancement board you can buy to fill the slots in your Apple IIe.™ With Multi I/O, you only need one board and one slot to do the job of three. You see, Multi I/O gives you a printer serial port, a terminal/modem serial port, and a ProDOS™-compatible clock/calendar with battery backup all on one card!

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Interested? Wait, there's more. Multi I/O is easy to use and plugs into any of the slots typically designated for one of its three functions. Putting three functions on one card reduces power consumption so you won't have to spend any additional dollars on auxillary power. And if you compare prices, you'll find that for a few extra dollars, Multi I/O will provide you with three functions instead of one!

So, there you have it, another innovative product from AST. We've set the standard once, and we'll do it again by bringing you the type of quality you expect, but at a very low price. Visit your local computer retailer today, or contact AST Research for a dealer near you.

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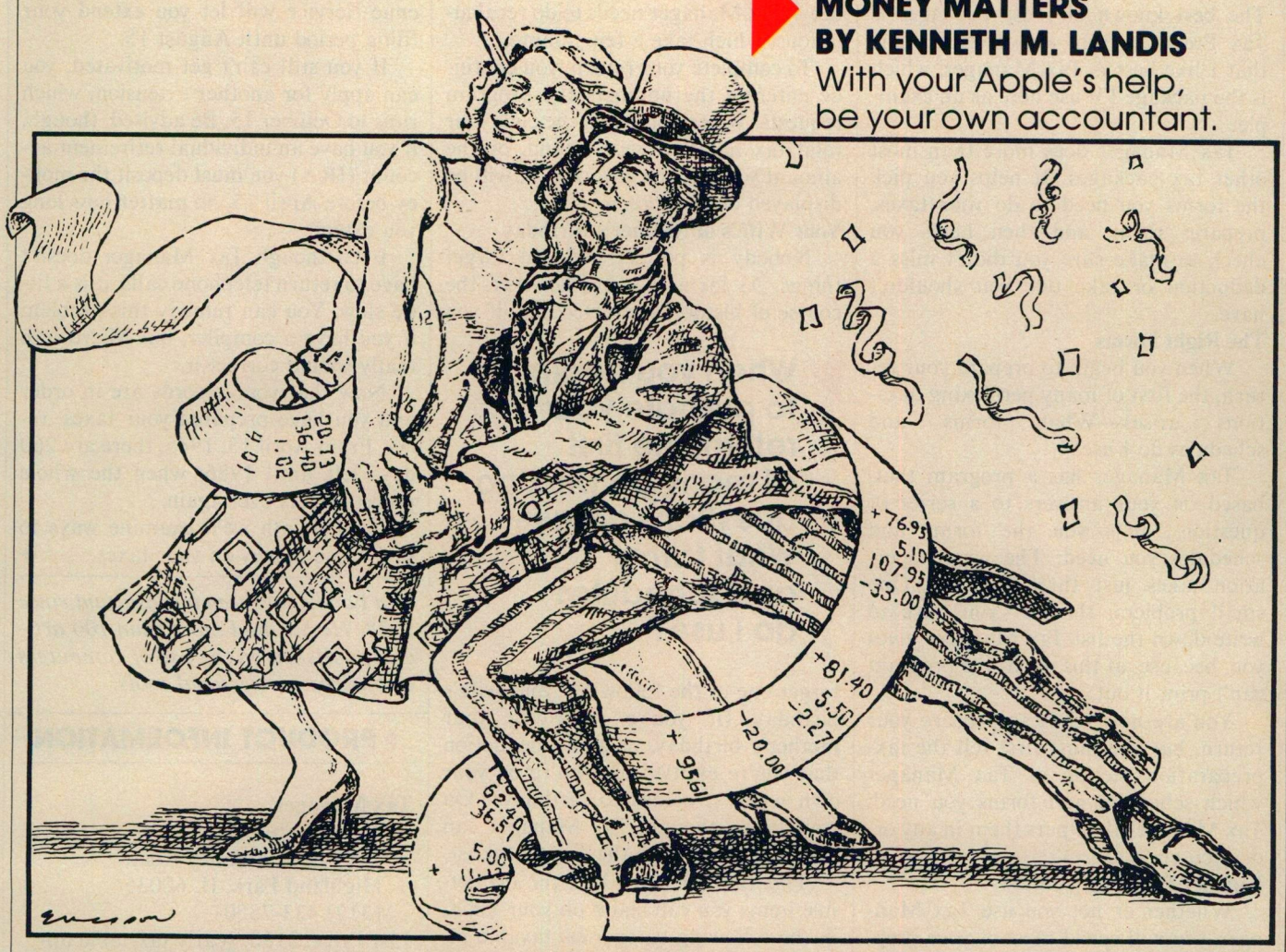
CIRCLE 323 ON READER SERVICE CARD

MONEY MATTERS
BY KENNETH M. LANDIS
With your Apple's help, be your own accountant.



DOING THE TAX DANCE

Happy New Year! At 12:01 A.M., January 1, 1985, only 20 days remain till the Super Bowl; 98 days till the opening of baseball season; and 105 days till April 15, 1985, the opening of the 1985 (tax year 1984) tax season! Football and baseball are spectator sports—you watch. Taxes are participative—you file, they audit.

Every year you go through the same drill—step 1, get the records in order; step 2, prepare the return. A perfect cadence. One that you must keep, or else . . .

Once you have completed step 1, it's time to gather all the proper forms and schedules. Then begins the calculating and recalculating of your income, expenses, allocations, and so on. Finally, when you are all through with the mechanics of getting your return prepared, you begin to wonder if you forgot something, and then you go through it all again.

If you don't look forward to confining yourself in a room for a weekend—possibly even a week—then you probably agree that there must be a better way.

Your Money, or Less of It

You can hire an accountant to do everything, or you can use the power housed in that beige box with an apple on it. Retaining an accountant has its pluses and minuses. On the plus side, it's easier than doing the taxes yourself, and the fees are tax-deductible next year. On the minus side, accountants charge fees for their services.

Chances are your accountant uses a computer to prepare your return, so why shouldn't you?

Too many people hire accountants to act as bookkeepers rather than as tax advisers. If all your accountant is doing is preparing your return, you're not getting your money's worth. An accountant should offer counsel on the tax implications of your particular financial situation. Your accountant should be giving you tax advice, not just tax services.

Your other option is to use your Apple and a good piece of tax-preparation software. The software is also deductible, it works when you want it to work, and you don't have to wait for it to return telephone calls.

Whose Computer?

Chances are your accountant uses a computer to prepare your return, so why shouldn't you? Many software packages are designed to help individuals, partnerships, and even corporations prepare their taxes. Several packages on the market do a good job

CELESTE ERICSSON

of helping individuals prepare their tax returns on Apple II-series computers. The best known of these packages is Tax Preparer from HowardSoft. One that I like best is Tax Manager, which is the package I'll use here as an example.

Tax Manager does more than most other tax packages. It helps you pick the forms you need to do your taxes, prepares them, and then helps you check to make sure you didn't miss a deduction or take one you shouldn't have.

The Right Forms

When you begin to prepare your return, the first of many perplexing questions arises—What forms and schedules do I use?

Tax Manager has a program that, based on your answers to a series of questions, tells you the forms and schedules you need. The whole operation takes just three minutes. One small problem, though—you have to write down the list Tax Manager gives you, because, at this point, the program can't print it out.

You are now ready to prepare your return, but you must first tell the tax-preparation section of Tax Manager which schedules and forms you need. Tax Manager then puts them in any order you choose.

Number Plugging

Whether or not you use Tax Manager, you will spend most of your preparation time from this point on doing the arithmetic needed to complete your return. For example, if your family has three sources of income—your full-time job, your part-time job, and your spouse's full-time job—you have to sum all three together and enter the resulting total on your return.

Tax Manager does the arithmetic for you. You key in a description of the source of income and the amount from the W-2 form, and Tax Manager does the rest. It can store up to 200 descriptions and dollar amounts, add them together, and then plug them into Form 1040.

To make sure you've entered everything correctly, you can scan the entries on the screen, but again you can't print them out.

Each time you make an entry into Tax Manager, it automatically calculates up to line 40 of Form 1040—total tax—and displays it in the bottom right-hand corner of the screen. If you want to try some what-if assumptions, this process enables you to do so.

For certain forms and schedules—tax credits, alternative minimum tax, and Social Security self-employment tax—Tax Manager needs to do recalculations, which take a few minutes.

To complete your return, you continue entering the numbers the program requests. When you reach the end, your total tax liability, your refund, or the amount you owe the government will be displayed on the screen.

Your Wife's or Mother's Birthday

Nobody is perfect. We all forget things. As far as I know, however, the course of history is affected only if you forget one of the following: your wife's birthday (if you're married), your mother's birthday, or a tax deduction that you're entitled to. You're on your own when it comes to birthdays. On your taxes, though, Tax Manager can lend a hand through the Tax Checklist.

When you begin to prepare your return, the first of many perplexing questions arises—What forms and schedules do I use?

The Tax Checklist lists the deductible items you can claim on your taxes, in the following categories: taxable income items, business or professional deductions, farm deductions, deductions toward adjusted gross income, investment tax-credit properties, energy tax credits, and itemized deductions. The checklist also tells you many of the items you cannot deduct.

You can ask questions in two different ways. Tax Manager can search its library based on a keyword that you supply, or it can print out everything it knows in a particular category. In either case, it tells you what you can deduct and stops you from deducting things you can't.

When you're finished, Tax Manager saves your tax return to disk (you can also tell it to save information intermittently along the way to protect yourself from mistakes, power failures, and so on) and prints out facsimiles of all the forms and schedules you need.

Then it's just a matter of copying your information onto IRS forms and schedules, signing them, and mailing them in.

Never Leave for Tomorrow . . .

If you can't seem to find the time or motivation to prepare your returns before April 15, 1985, the Internal Revenue Service will let you extend your filing period until August 15.

If you still can't get motivated, you can apply for another extension, which runs to October 15. Be advised, though, if you have an individual retirement account (IRA) you must deposit the money before April 15, no matter how long you extend.

Even though Tax Manager doesn't have to return telephone calls, it is a little slow. You can remedy this problem if you have a compiler, but Micro Lab really should correct it.

Now that your records are in order and you have prepared your taxes, relax. From April 15, 1985, there are 260 days left until 1986, when the whole process starts over again.

Next month we'll examine ways to save some money on your taxes. +

Ken Landis has been a consultant since 1978. He has had more than 100 articles published on the use of computers as business or personal tools.

PRODUCT INFORMATION

Tax Manager
Micro Lab, Inc.
2699 Skokie Valley Road
Highland Park, IL 60035
(312) 433-7550
List Price: $180; yearly tax-table updates, $30 one-time fee
Requires: Apple II, II Plus, IIe, or IIc; one or two disk drives; printer

Forms and schedules supported:
Forms 1040, 1040EZ; Schedules A, B, C, D, E, F, G, R&RP, SE, W; Forms 104ES, 2106, 2210, 2119, 2441, 3468, 3903, 4625, 4797, 5695, 6251

CIRCLE 513 ON READER SERVICE CARD

Tax Preparer
HowardSoft
8008 Girard Avenue
Suite 310
La Jolla, CA 92037
(619) 454-0121
List Price: $250; updates, ¼ to ⅓ of current retail price.
Requires: Apple II, II Plus, IIe, or IIc; 64K RAM; one or two disk drives; printer

Forms and schedules supported:
Forms 1040; Schedules A, B, C, D, E, F, G, R, SE, W; Forms 2106, 2119, 2210, 2441, 3468, 3903, 4562, 4797, 5695, 6251

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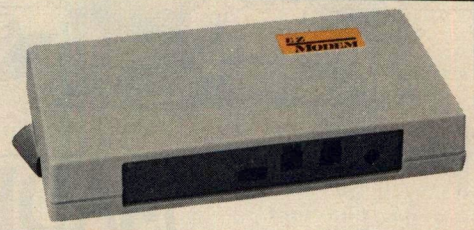
4 Products in One Package

Modem



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- Easy-to-use
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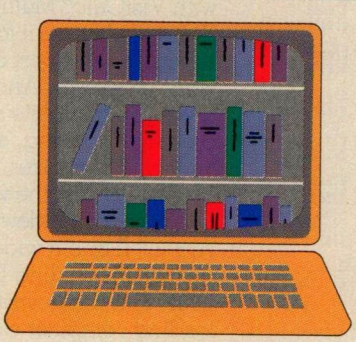

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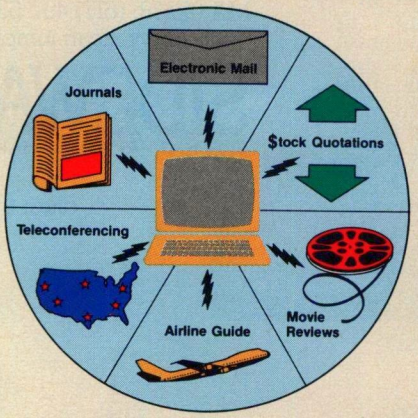

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- Stock quotations
- Journals and magazines in all career arenas
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800-22LEARN or **800-44LEARN** in California

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TeleLearning Systems, Inc.
505 Beach Street
San Francisco, California 94133
415/928-2800

CIRCLE 421 ON READER SERVICE CARD

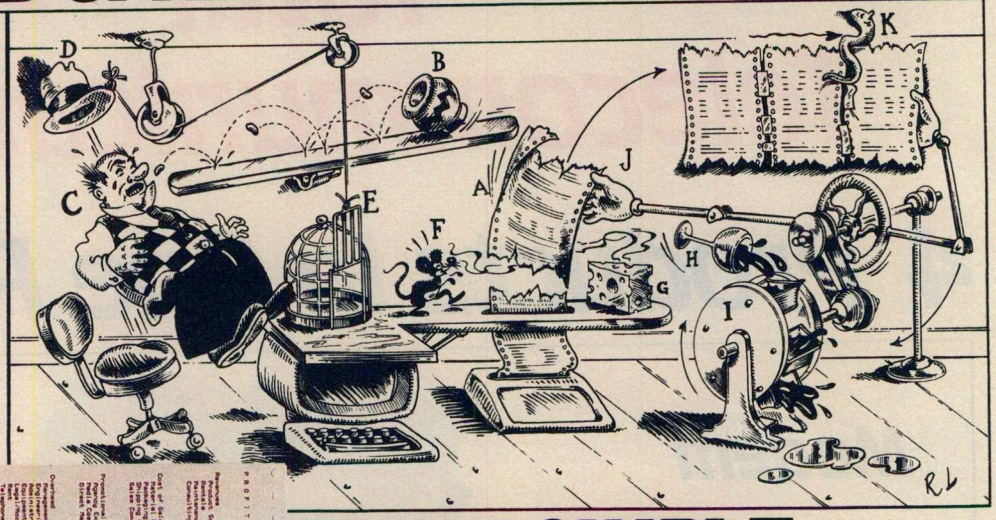
SIMPLIFIED SPREADSHEET ASSEMBLY

RISING SPREADSHEET (A) KNOCKS MEXICAN JUMPING BEANS (B) INTO MOUTH OF NEUROTIC MAN (C) WHO IS SO DISCOMBOBULATED THAT HIS HAIR STANDS ON END, DISLODGING HAT (D) WHICH OPENS CAGE (E) AND RELEASES EPICUREAN MOUSE (F).

MOUSE, INSPIRED BY SCENT OF PERFECTLY AGED CAMEMBERT CHEESE, GNAWS THROUGH SPREADSHEET, ONLY TO DISCOVER HE HAS BEEN FOOLED BY AROMA OF OVER-RIPE GORGONZOLA (G).

IN A FIT OF PIQUE HE SPILLS VINTAGE WINE (H) INTO WATER-WHEEL (I) WHICH TURNS PULLEY THAT CAUSES GLOVE (J) TO GRASP SPREADSHEET AND MOVE IT TO TAPING AREA.

SHEET IS TAPED SECURELY IN PLACE BY TRAINED ADHESIVE TAPE WORM (K).



MADE SIMPLE.

Now you can save time, aggravation, adhesive tape, and Gorgonzola cheese by following one simple direction—Sideways. It's the unique software program that lets you output all the spreadsheet columns you need, all on one continuous page, all with one print command—and all for only $60!

The New York Times calls Sideways "one small program that solves a big problem for computer users". You'll agree. Sideways can print as wide a spreadsheet as you can invent with VisiCalc,® Multiplan,® or other programs. You can also use it for those far-into-the-future schedules and pert charts you create with your word processor. And there's more—Sideways gives you complete control over margins and character spacing, and lets you choose from a variety of type sizes. For any wide text file, for dozens of uses, the way to go is Sideways.

You can go Sideways today with your Apple® II and a wide variety of dot matrix printers, including Epson,® Okidata, Apple DMP, and Imagewriter. Ask for Sideways at leading computer stores. Or mail a $60 check to Funk Software, P.O. Box 1290, Cambridge, MA 02238. (617) 497-6339. MC/Visa accepted. Send no Mexican jumping beans, please.

SIDEWAYS™

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CIRCLE 154 ON READER SERVICE CARD

GRAPHICS
BY ROBERTA SCHWARTZ AND MICHAEL CALLERY

The New Year ushers in a new bimonthly column on the latest in graphics.

GRAPHICALLY SPEAKING

It's hard to imagine an Apple computer without graphics. From that first homebrew Apple I to the Macintosh, Apple computers have allowed users to display information with pictures as well as with words. Whether your needs are for simple black-and-white charts and graphs, full-color illustrations, or dynamic animations, you'll be able to find an Apple that offers those capabilities.

What We're About

A large gap lies between a computer's ability to produce graphics and the actual creation of graphics by users. The popularity of Apple computers has led to an immense cornucopia of graphics software and hardware products that narrow the gap. Unfortunately, this cornucopia can also lead to confusion because of the huge number of products. One of the things we will be focusing on in this column is graphics software and hardware.

As graphic artists, we are constantly in touch with manufacturers and publishers. We'll keep you up to date by reporting on products in the developmental stage, but we'll wait until we've used each item before offering our evaluation. As teachers of graphics on the Apple computer, we know where new users stumble. We'll answer the questions our students—and readers—most often ask.

As programmers, we develop techniques and often create custom routines for special effects or to make our programs more efficient in terms of length and/or execution speed. We'll share some of these techniques and programs with you. Let's get started with a new paint program.

Blazing Paddles

Paint programs let you create high-resolution screens. A good paint program should let you paint freely instead of bogging you down with menus or command keystrokes. It should offer a variety of options, such as freehand drawing, lines, boxes, ovals, color and pattern fills, block moves ("stamping"), text capabilities, and a magnification mode.

Whether your needs are for simple black-and-white charts and graphs, or dynamic animations, you'll be able to find an Apple that offers those capabilities.

Blazing Paddles offers all of these options, and you select from an icon menu that is similar to, but better organized than, Koala Technologies' Micro-Illustrator menu. (See *A+*, April 1984, pages 82–96, for a review of Micro-Illustrator and several other paint programs.)

Most paint programs offer at least one unique feature. Whatever makes a program unique usually determines whether or not you will select that particular program rather than another. Blazing Paddles has several special features. One of them, a clever color-mixing formula, provides a selection of "textured hues" that are quite different from what other programs offer and are attractive and useful. Another feature loads a standard Apple shape table and stamps the shapes anywhere on the screen. The best of the special features is the Zoom mode.

In the Zoom mode, the hi-res screen is magnified, and you have complete control of every pixel on the screen. Blazing Paddle's Zoom mode has a window that overlays part of your picture, so you can see the effects of your pixel manipulation on the normal-size picture, as you work.

MacPaint (and MousePaint) require you to select a hand symbol to push an image around to reveal portions of it that are not visible in the window, and other paint programs make you return to the normal-size image to choose another zoom window. In Blazing Paddles, when you move the cursor out of the window, the window scrolls around the screen. Baudville's zooming method is simple and elegant.

Blazing Paddles can work with a variety of input devices, including joysticks, touch tablets, graphics tablets, and the like, and with the AppleMouse II, it is what MousePaint should have

been. Recognizing that the Apple II cannot totally emulate the Macintosh, Baudville has provided functionality without slavish imitation.

Blazing Paddles is a joy to use. We recommend it highly.

Up and Coming

We're currently playing with Computer Colorwork's Flying Colors and Digital Paintbrush System. We'll report on these products soon.

Solutions

One of the great mysteries our students encounter is the incompatibility between pictures created by different Apple paint programs. One program frequently can't load an image created by another. Isn't an Apple screen image an Apple screen image? Yes, but the problem is in the way the image is saved to the disk.

A good paint program should give you the option of saving a packed version of your picture *or* the normal 8K image.

The most common reason for picture incompatibility is the filename. Most graphics software appends a prefix or suffix to the filename you type in. You'll see this appendage only if you catalog your disk under DOS. Baudville software products require picture files that begin with the prefix PI, whereas Penguin Software products require picture files with the suffix .PIC. Koala appends PICTR., and yet other software requires PIC. in front of the filename.

The best way to deal with this filename incompatibility is to become familiar with DOS's Rename command. Use Rename to change the filename of a picture made with one package to fit the filename requirements of the other package you want to use.

Another reason for incompatibility is picture compression. To save disk space, some programs compact or "pack" the screen image. A typical Apple graphic image requires 8K bytes of memory. Fourteen of these 8K pictures can fit on one Apple disk. Picture packers save data that represents repeated bytes of information. Instead of saving the information as black dot, black dot, black dot . . ., it saves it as five bytes of black, four of white, one of green, and so on. Packed pictures take up varying amounts of disk space—the more detailed or complicated the image, the larger the file.

Compression is fine if you are sticking with one graphics program, but if you want to use an image with another program or want to use it in your own program, you'll probably want the full 8K image. A good paint program should give you the option of saving a packed version of your picture *or* the original normal 8K image. Penguin Software offers this choice. If a program saves only packed versions, it should provide a utility for converting the compressed image to its normal form. If it doesn't, don't use it.

Different software products may load or save pictures to different pages of memory. Since Apple II computers have two hi-res graphics screens or pages, you cannot assume that a screen image has been created on page 1 or page 2. You can't tell easily which page the program expects the picture to be on, except by experimentation. Try this simple program:

```
10 HGR : HCOLOR=3: GOSUB 100
20 PRINT CHR$(4)"BSAVE
   PAGE1.PIC,A8192,L8192"
30 HGR2: GOSUB 100
40 PRINT CHR$(4)"BSAVE
   PAGE2.PIC,A16384,L8192"
50 TEXT: END
100 FOR I = 0 TO 190 STEP 10
110 HPLOT 0,1 to 279,1: NEXT
120 RETURN
```

Change the filenames in lines 20 and 40 to include the filename suffix or prefix your commercial paint program expects; then try to load the pictures you just created with this program into that paint program.

If your program loads only PAGE1.PIC, it uses page 1; if your program loads only PAGE2.PIC, it uses page 2; and if it accepts both, you have no problem.

The final reason for picture incompatibility is file length. Some graphics programs (Koala's Micro-Illustrator, for example) accept files only of a certain length. Although a full 8K is assigned to the Apple hi-res graphics screen, not all of this memory is displayed. Under DOS 3.3, you can save a whole sector (256 bytes) of disk space by not saving some of this nonvisible memory. Thus, you can save a hi-res graphic as a 33- or 34-sector file. Your picture will look the same, but your catalog will show the difference in the file-size column. Try this:

```
10 HGR:HCOLOR=3
20 FOR I = 0 TO 279 STEP 10
30 HPLOT I,0 to I,191:NEXT
40 PRINT CHR$(4)"BSAVE
   BIGPIX,A8192,L8192"
50 PRINT CHR$(4)"BSAVE
   SMALLPIX,A8192,L8187"
60 TEXT
70 PRINT CHR$(4)"CATALOG"
```

This program creates two picture files, BIGPIX at 34 sectors and SMALLPIX at 33 sectors, yet when you view the image, you can't tell the difference. After saving a picture made with your paint program, catalog the disk to determine if it saves images as 33- or 34-sector files.

A Sector Saved Is a Sector Earned

When using programs that create 34-sector pictures, we usually convert them to 33 sectors. To do this, boot DOS and put your picture disk into the drive. Substitute the name of your picture for NAME and run the following program. Be sure to include the 2 next to your filename in line 30.

```
10 HGR
20 PRINT CHR$(4)"BLOAD
   NAME,A8192"
30 PRINT CHR$(4)"BSAVE
   NAME2,A8192,L8187"
40 TEXT: PRINT
   CHR$(4)"CATALOG"
```

Now that you have saved a 33-sector version of your picture to disk, delete the original 34-sector file. If you save a sector on each of the 14 pictures, you'll be able to save an extra picture on the disk.

Talk to Us

We're looking forward to your comments, questions, and suggestions. Please write to us c/o *A+* Magazine, 11 Davis Drive, Belmont, CA 94002. ✚

Roberta Schwartz and Michael Callery teach computer graphics at the New School in New York City. They have collaborated on several educational software projects and are writing a book on Apple graphics for Prentice-Hall.

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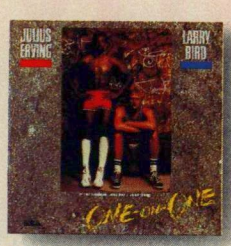

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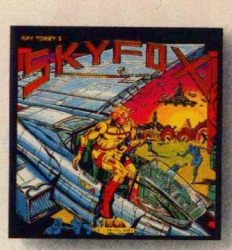

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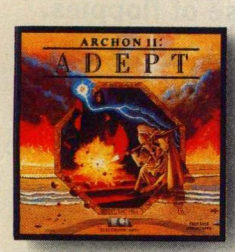

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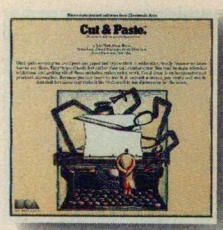

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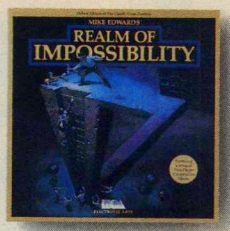

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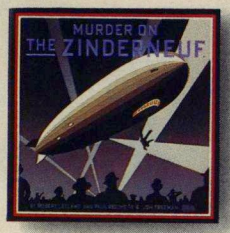

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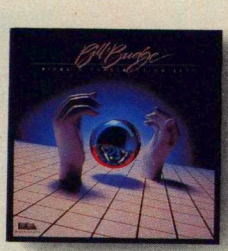

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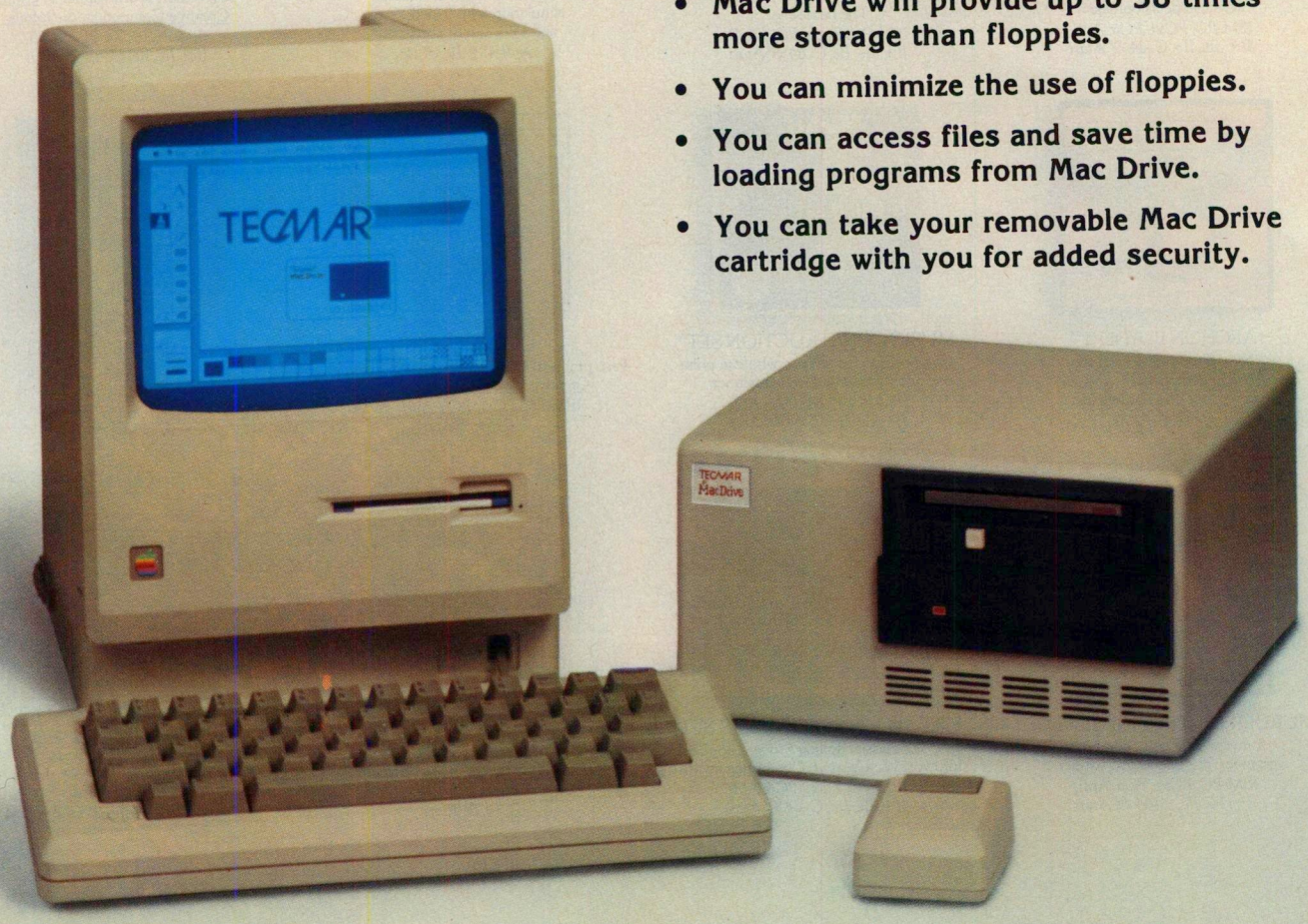

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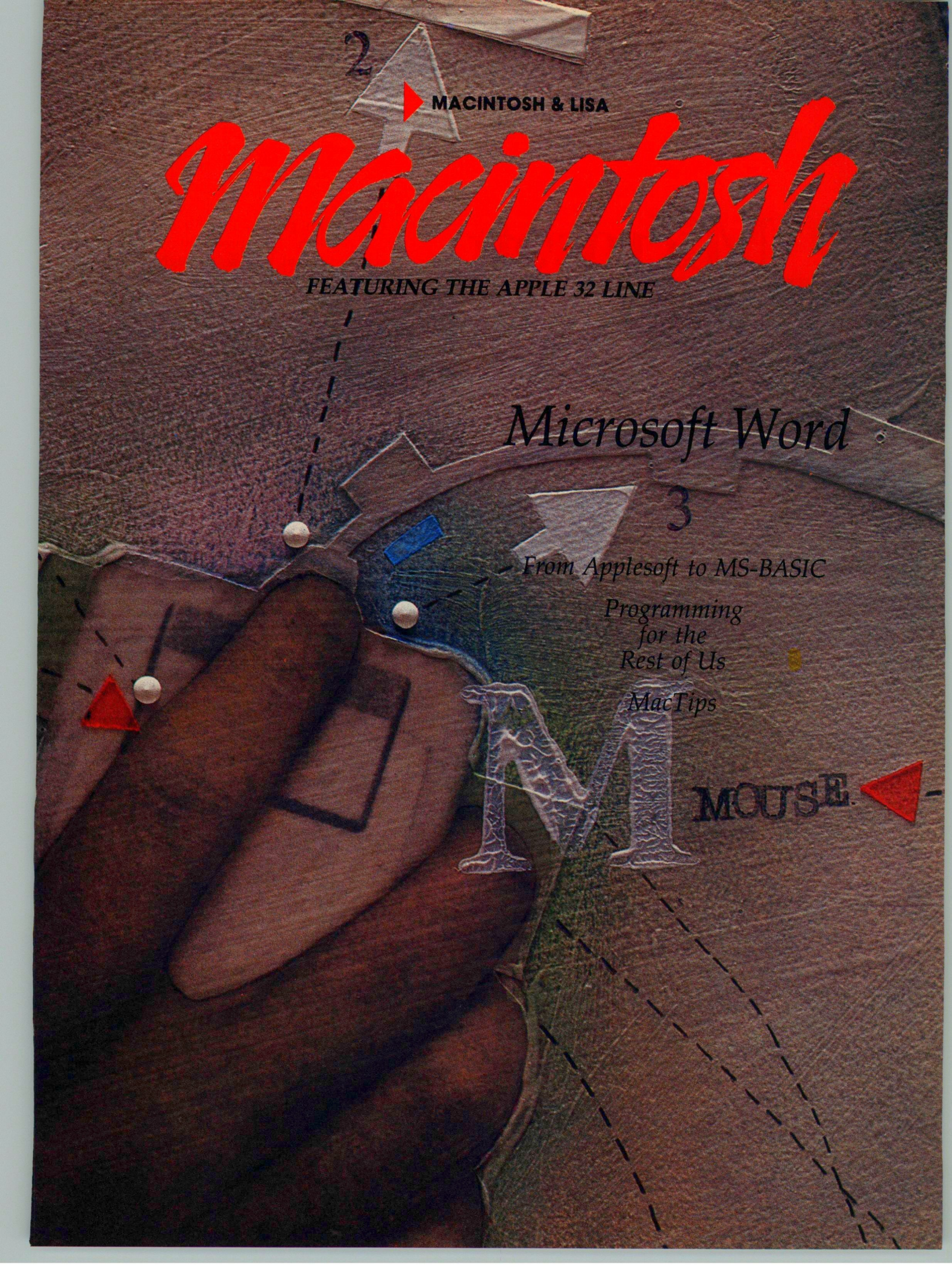
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State-of-the-art word processing for the Macintosh

If you own a Macintosh, you're probably familiar with the virtues and limitations of the word-processing program MacWrite. If you're considering buying a Mac mainly to do word processing, you're probably waiting for more software to appear.

Of the more than 200 Macintosh products available in November, only two of them, MacWrite and Microsoft Word, were word-processing applications. Several more are on the way, but, in the meantime, I'd like to examine the first alternative to MacWrite. Before giving you the word about Microsoft Word, I'll start with a few tips about evaluating word-processing software.

Although many people contend that you can't really understand a software application until after you're familiar with it (it's like choosing a college), you should keep some key things in mind when selecting one. The first factor you need to consider is the kind of work you do. How long are your documents? Would you like to be able to paste in graphics? Do you create form letters?

Next, you need to get some idea of what the software does. All word-processing packages perform the basic functions of entering text; inserting, deleting, and rearranging things; and formatting and printing what you've created. Beyond that, features vary. Since Microsoft Word is loaded with features, it's a good candidate for an examination of just what word processors can do.

A final consideration is the ease of getting the program to do what you want it to do. *Easy* is a relative term, and the ease of using a program depends in part on your skills and computer experience. Using a pull-down menu and a couple of mouse clicks to create a footnote, for example, is easier than typing 14 keystrokes to accomplish the same task. A closer look at what Word does will give you not only an introduction to Word, but also some ideas about things to consider when buying any word-processing package.

Learning Word

The Word documentation includes a five-chapter tutorial that teaches you the basics in a relatively painless fashion. The instructions are concise, complete, and easy to follow.

For those of us who insist on figuring it out ourselves, Microsoft points out that the tutorial is designed for people who have never used a word processor; the rest of us can skip it. Even if you're familiar with word processing, though, you should browse through the tutorial just to find out what's new and different about Word.

By the time you've finished the tutorial (a beginner should be able to do it in about 45 minutes), you'll have performed all the basic functions necessary to start doing your own work. Even though you may have tried some things only once, the mouse, menus, and dialog boxes really shine here. You'll probably be able to remember most of what you've done, without further review.

Learning the other things Word can do requires digging through the "Using Word" section of the manual. I found this section to be less clear than the tutorial and sometimes overloaded with weighty explanations. For example, the passage that tells you how to use the Go To command begins with a seven-line explanation of the pagination process. Fortunately, the instructions to "choose the Go To command, type the page number you want to see, and click OK" are set off from the rest of the text. Thus, you can distinguish the information you want from other material you may not need at the time.

Microsoft also provides an on-screen Help feature that includes quite a bit of information. I found it much easier to use than the manual, but disk space does limit the amount of information it contains.

To use the Help feature, you type Command-?. The pointer on your screen turns into a question mark, and you can choose the topic with which you need help from the menus. Figure 1 (page 102) shows the Help screen for setting tabs. Learning how to perform any particular operation with Word is fairly easy, because the program makes excellent use of the Macintosh user interface, mice, and menus. Since Word contains so many features, however, there is a lot to learn.

Working with Word

Word includes the kinds of features we've come to expect from a

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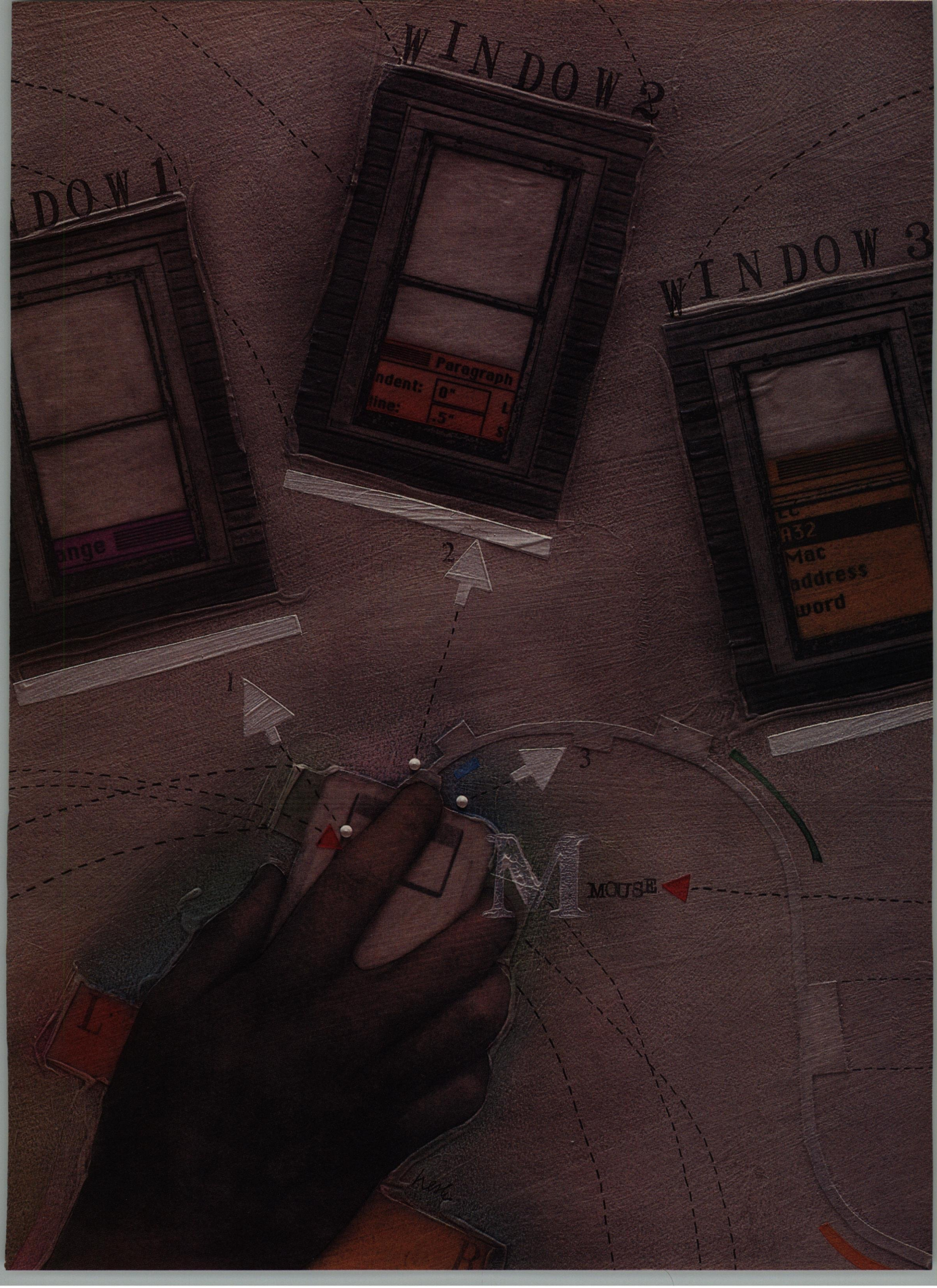
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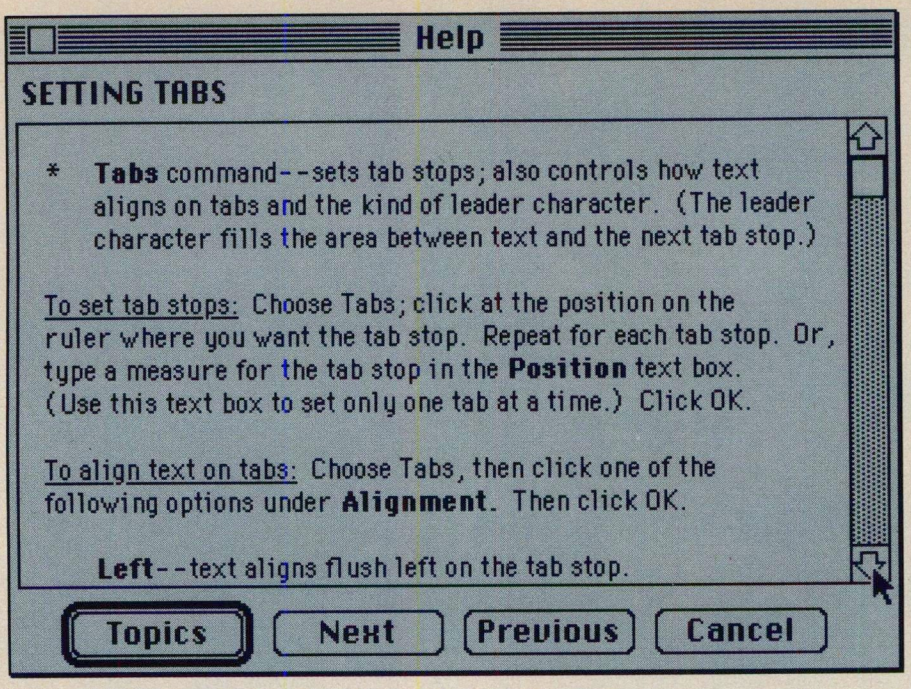

Figure 1: Word provides on-screen help for more than 20 key functions.

program for the Macintosh. Various type fonts and styles, boldface type, underlining, and subscripts and superscripts are features you can see on the screen, and their creation requires no embedded commands. What you see on your screen will be what you get from your printer. Although you perform most of the operations with the mouse, menus, and dialog boxes, additional keystroke commands are often necessary because the program offers so many functions. At first, these extra commands appear intimidating, but I found them well worth the trouble it took to learn them.

For the most part, whatever the feature, Word does *more*. So you'll have an idea of what I mean, let's look at some common word-processing functions and how you perform them with Word. To set tabs, for example, you can choose from a couple of methods. You can select Show Ruler and simply click on the position where you want a typical left-aligned tab. The ruler, by the way, takes up only the space of about two lines on the screen.

You can also set tabs by opening a dialog box (figure 2), choosing how you want the material aligned in relation to the tab, and then choosing the type of "leader" you want. This option fills the space between the text and the tab position with periods, hyphens, underscores, or blank space. You can also set a tab at a specified position (say 3½ inches) on the ruler, by typing that number in the Position box. Click OK, and you're done.

The choice of simply clicking to set tabs, or opening and using the dialog box, is typical of the way Word has been designed. Clicking on the ruler is a simple and intuitive action. Using the dialog box, although it may seem complex at first, provides you with

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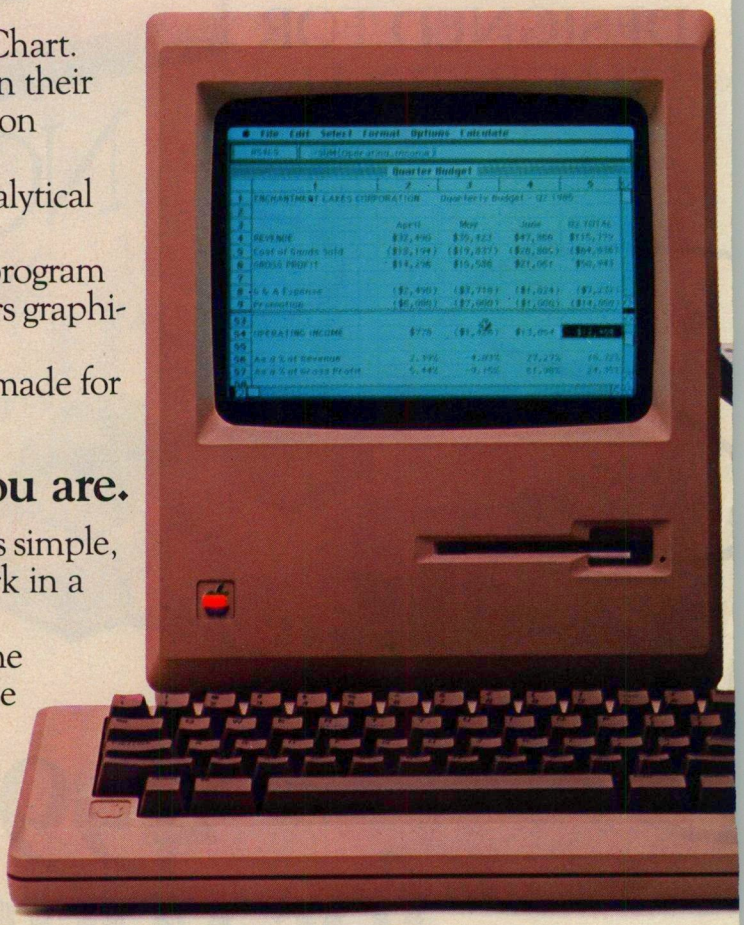

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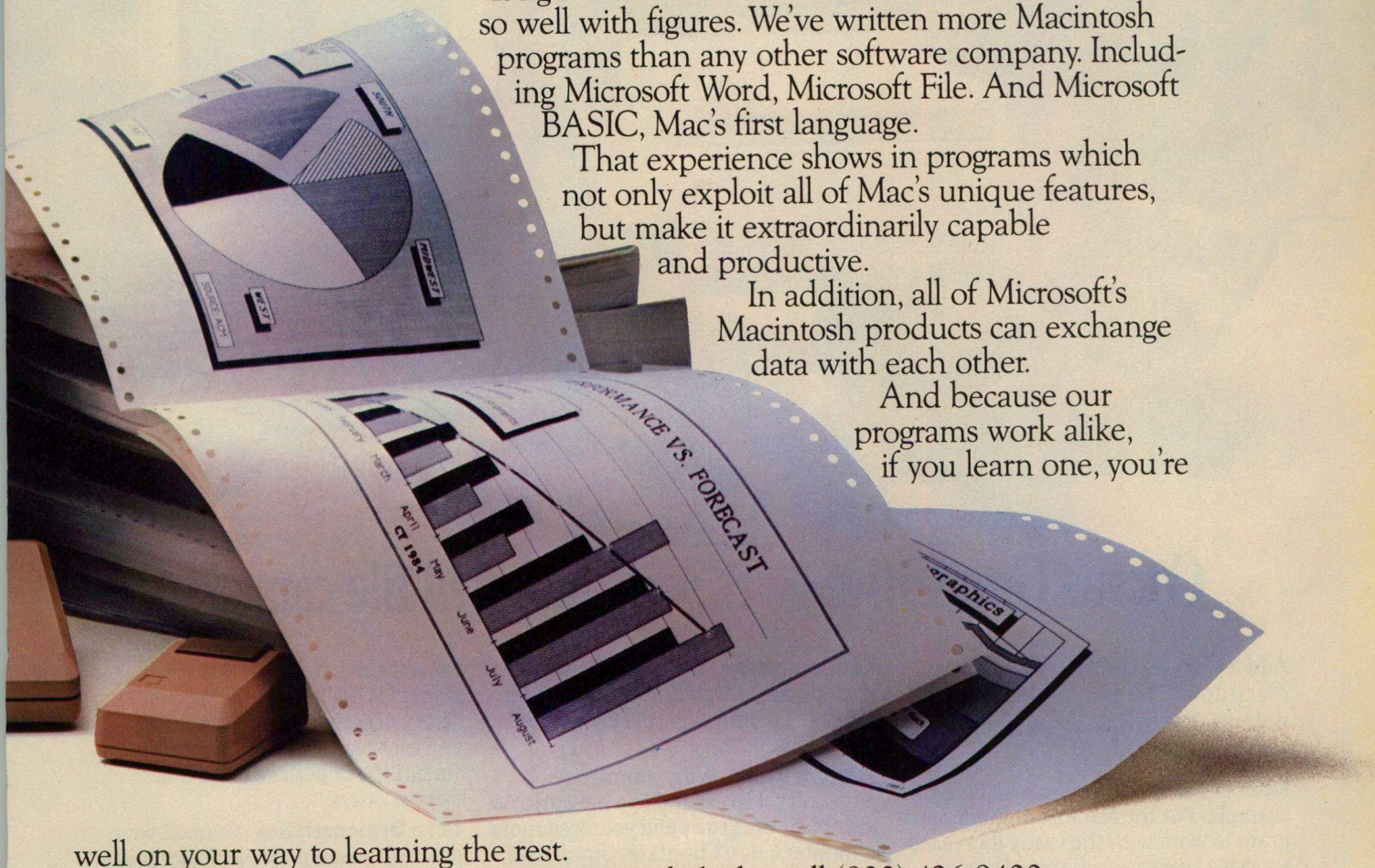

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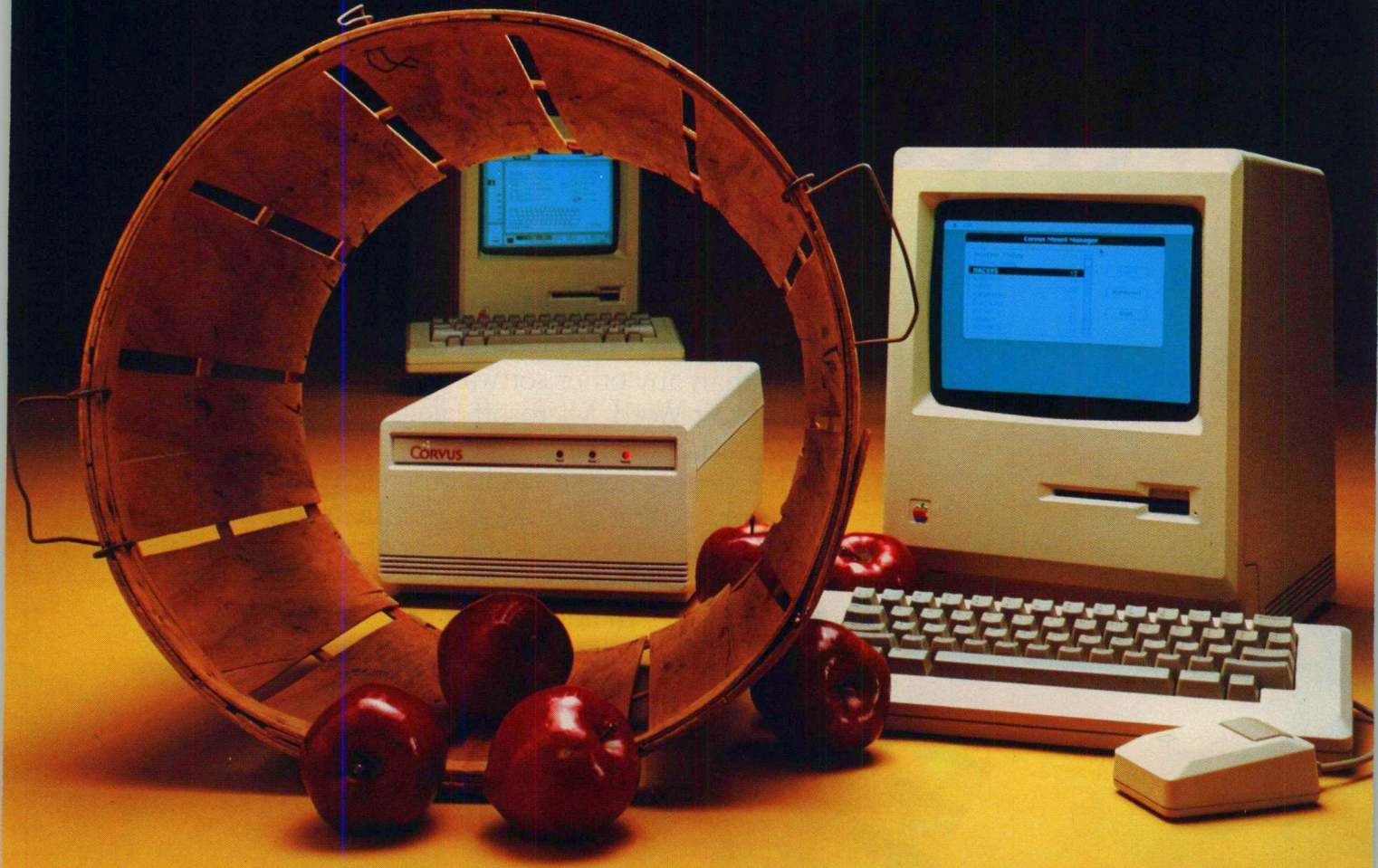

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four different kinds of alignment, four different kinds of leaders, and your choice of clicking or naming the tab position—and you can do all of this without having to learn any commands at all.

Microsoft has included optional keystroke sequences for the commands in the File menu (figure 3), which is a feature that is missing from many Macintosh applications. Here again, you have a choice: you can use the mouse and the menu, or, if you're violently opposed to removing your fingers from the keyboard, you can simply type the commands. These commands are not hard to learn: Command-N opens a new document, and Command-S saves your document, for instance.

Word has about 40 "key sequences" or "mouse and key sequences." At first glance, you may suspect that we've left behind the world of mice and menus for those arcane commands, but, again, these commands allow you to do interesting, complicated things. For example, Word provides a variety of ways to select text. You can always drag across it, as you can in all Macintosh applications. In addition, double-clicking selects a word, pressing the ⌘ key while clicking the mouse selects the entire sentence, clicking in the invisible selection bar on the left of the screen allows you to select an entire line, and double-clicking in the selection bar selects an entire paragraph. Although it may take you a while to learn these commands, you can always drag the mouse until you master them.

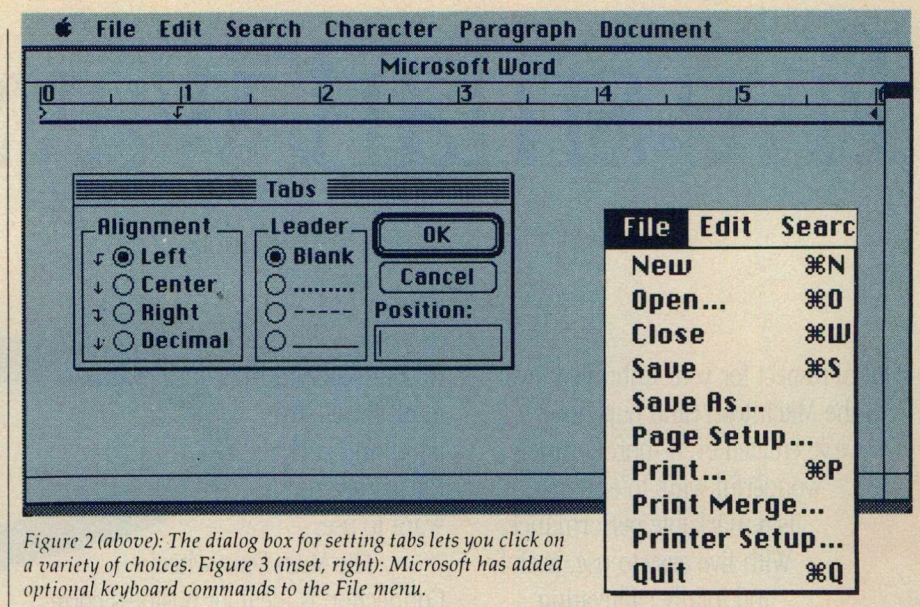

Figure 2 (above): The dialog box for setting tabs lets you click on a variety of choices. Figure 3 (inset, right): Microsoft has added optional keyboard commands to the File menu.

The ability to recover from mistakes is an important aspect of software. Word's Undo command not only lets you retrieve copy you have deleted with the Cut command, but it also allows you to recover text you have deleted by selecting the text and pressing the backspace key. Word writes this deleted material to the clipboard, so if you need to get it back, it's there.

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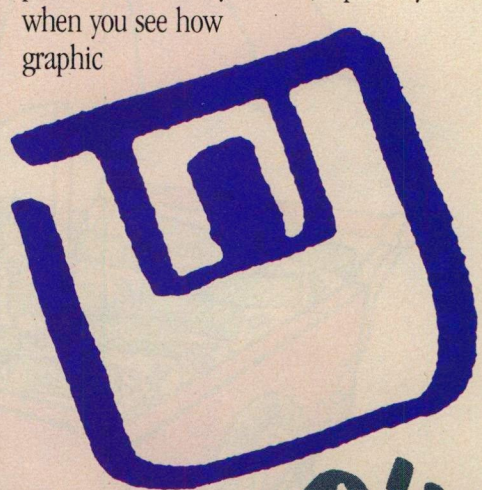

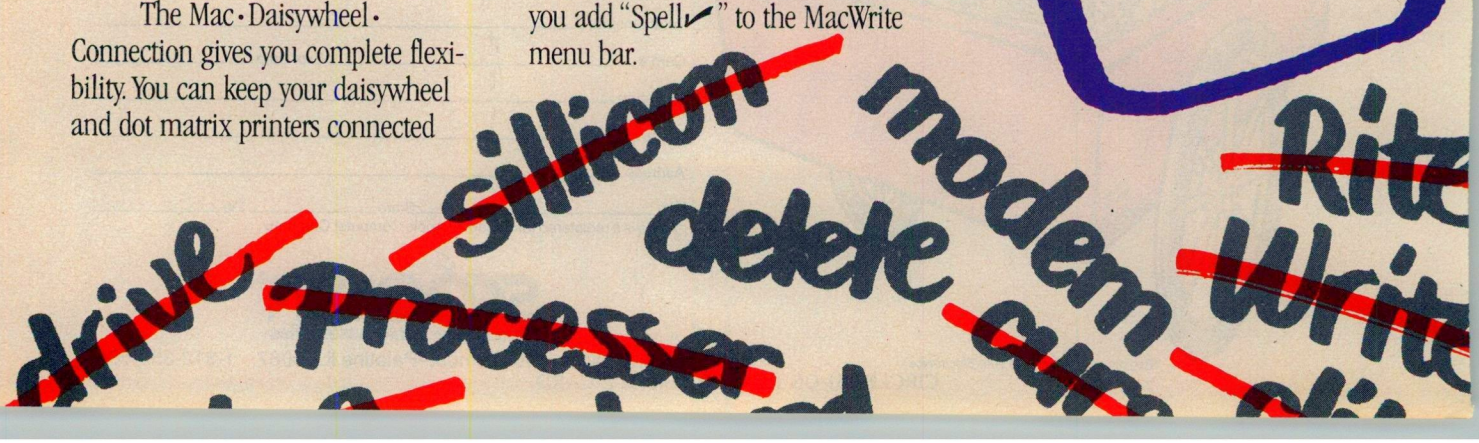

advantage of your Mac

your graphics look and how professional your texts look. Nothing could be simpler or faster (at 160 characters per second). And it takes only 30 seconds to transfer the software to your 3½″ diskettes or hard disks.

The Mac • Epson • Connection is totally versatile, too. Anything you can print on the Imagewriter™ you can print on an Epson. The Mac • Epson • Connection is compatible with any software that runs between the Macintosh and the Imagewriter.

The Mac • Epson • Connection comes with a program disk, a quick start-up guide and an interface cable. List price $89.

*The Mac • Epson • Connection supports a wide range of printer models from Epson, including the FX 80 and 100, the RX 80 and 100 and the LQ1500.

Mac • Turbo • Touch™

The Mac • Turbo • Touch is a new high-speed direct input device (or, if you will, a turbocharged "mouse") for your Macintosh. This is not meant to imply that the legendary love affair between mouse and man is over. Rather, for those of you who are ready for something that can respond as quickly as you do, there is now an exciting option. An option that reduces the time it takes to edit a document by 40%. An option that covers the same ground the mouse covers in one-third the time and in one-fourth the desk space.

What's more, the Mac • Turbo • Touch is always right where you need it whether you're right- or left-handed because you can park it on either side of the keyboard. Where does it plug in? In the mouse port, of course.

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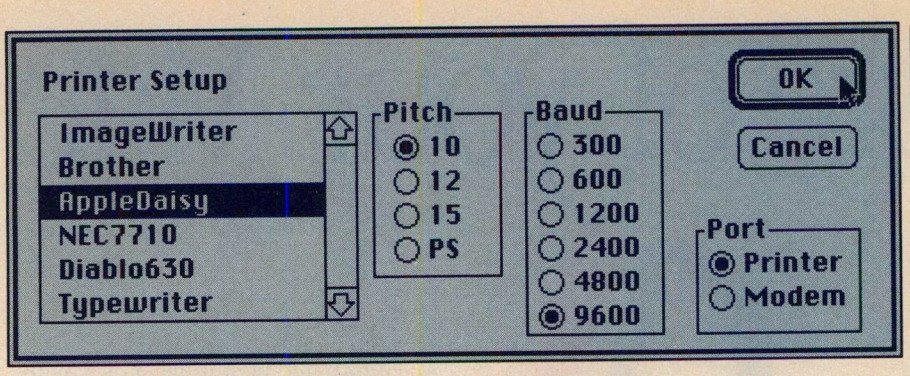

Figure 4: Printer drivers that come with Word support daisy-wheel printers.

With Word, you can have up to four document windows open on the screen at one time. Given the size of the Macintosh screen, you probably won't want to open four at once, but you may want to refer to notes while working on a manuscript, or you may want to copy and move text between documents, without things disappearing into the clipboard. Since you can create lengthy documents, the ability to split the screen so that you can compare page 1 with page 50 is convenient.

As usual, you can resize and move windows on the screen. You can also double-click in the size box or on the title bar to make a window full size, or to return to a smaller size. Printer drivers, which allow your Mac to communicate with daisy-wheel printers, come with Word. The Printer Setup dialog box (figure 4) lets you select the driver, pitch, and transmission rate appropriate for your printer. If you have both an Imagewriter and a daisy-wheel printer, you can plug the latter into the modem port and the former into the printer port and then click to select the proper port. If you do have a daisy-wheel printer, you'll probably need to buy a cable, but you won't have to get a separate software package to drive the printer.

Word has far more state-of-the-art word-processing features than I can tell you about here, but now that you have an idea of how to go about using Word, let's look at a few of them.

Glossaries let you store and enter frequently used text without having to retype it each time. Typical glossary entries may include your company name and address, or a standard clause in a contract. You first create and save the text in a glossary. When you want to insert this text, you type in the glossary name and ⌘-backspace to enter the text. The amount of text you can include in a glossary is limited only by disk space.

Word's automatic footnote feature lets you enter a symbol or a number in the text, type your footnote text in another window, and have it printed either at the bottom of the page or at the end of a division (such as a chapter). The program can number the footnotes, if you like, and renumbers them if you insert a new footnote between existing ones. Figure 5 shows you how it's done.

The Print Merge function lets you print multiple versions of a form document—a form letter, a main document with certain inserted text, or a merge document that compiles data from other documents or programs—

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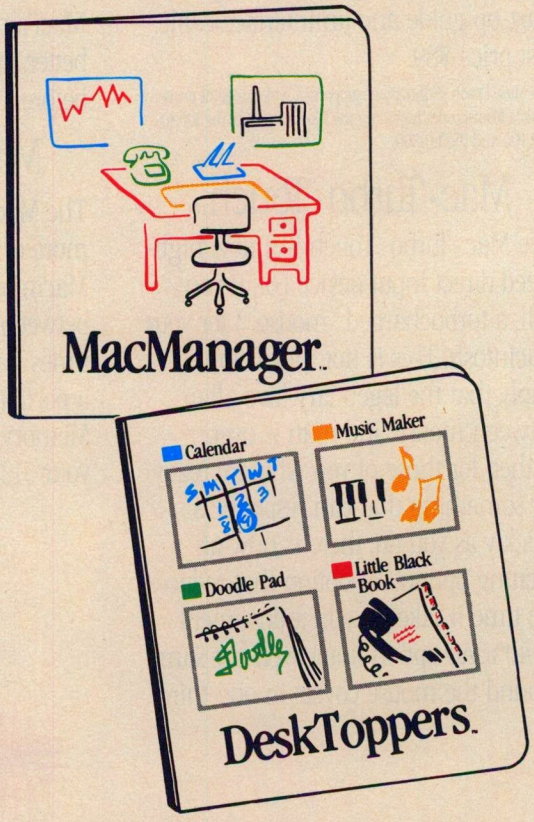

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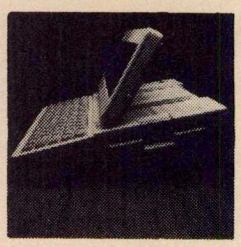

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Limitations and Problems

One feature Microsoft Word lacks is a spelling checker. I suppose, given the formidable size of the program, there simply wasn't room to include a spelling checker or dictionary. Nevertheless, if spelling is the bane of your existence, you may rule out Word because of this omission. If you've used Word's style sheets on other systems, you'll notice their absence as well.

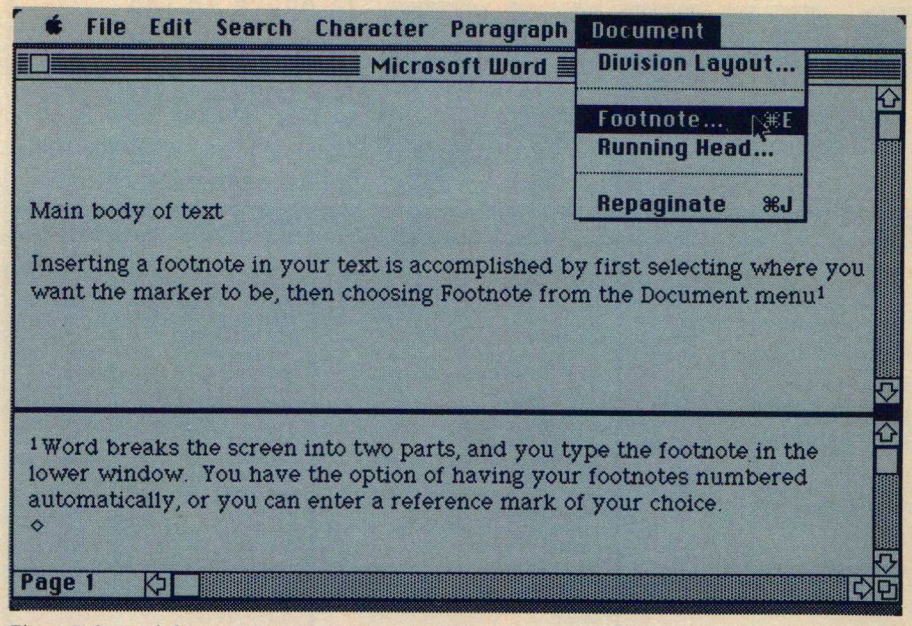

Figure 5: State-of-the-art automatic footnote capability

Limited disk space presents another problem. Microsoft recommends that you use Word with a two-drive system. The text copy I received had only 18K of available memory, and Microsoft suggests that you always leave 10K free for running the program. Obviously, this amount of space is not sufficient for creating and printing a long document, much less designing a form letter and merging it with a large mailing list. If you remove nonessential files such as tutorial files and printer drivers, you'll have enough space for 50 to 60 pages of text on your disk. If you want to work with large quantities of information, however, you'll definitely

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need to have a second drive.

Speaking of disks, Microsoft Word is copy-protected. Although you can make as many copies of the programs as you wish, you have to insert the master disk whenever you boot your system. Because the program is disk-based, and thus frequently reading and writing to disk, the program works much more slowly than if the entire document were in memory.

Word is a state-of-the-art product that contains almost all of the special features designed for word processors to date. Your decision to buy it will probably depend on whether or not you need all these functions—some of us never write form letters or use footnotes.

As for ease of use, I think Microsoft Word on the Macintosh is the easiest full-featured word processor around. I particularly like its command flexibility. The text-selection commands, for example, can be ignored at the beginning and used later when you work your way up to them. I think they're worth the trouble. If you're thinking of buying, you should know that Word can read and work with your MacWrite files without any modifications or additional instructions.

Microsoft Word may be the answer to your word-processing dreams, or it may be beyond the scope of your work. Coping with its complexity may be difficult for some, but experienced users of word-processing programs shouldn't have any trouble. If you're new to word processing but would like to be able to do the kinds of things Word can do, tackling Word will be well worth the effort. ✚

Sue Crissman is a Bay Area writer, consultant, and contributing editor to A+. Her consulting clients include Apple and other computer companies, for which she designs and writes training, sales, and promotional materials.

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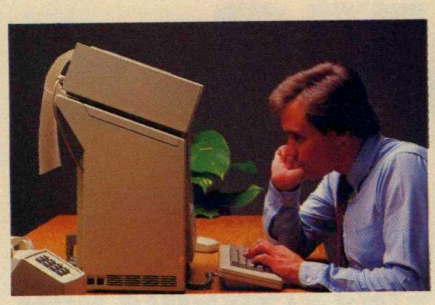

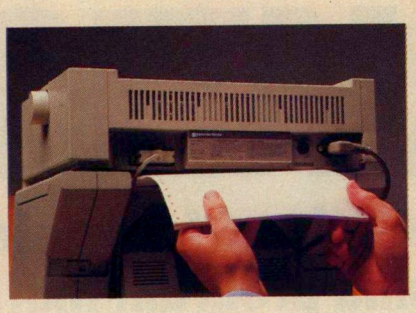

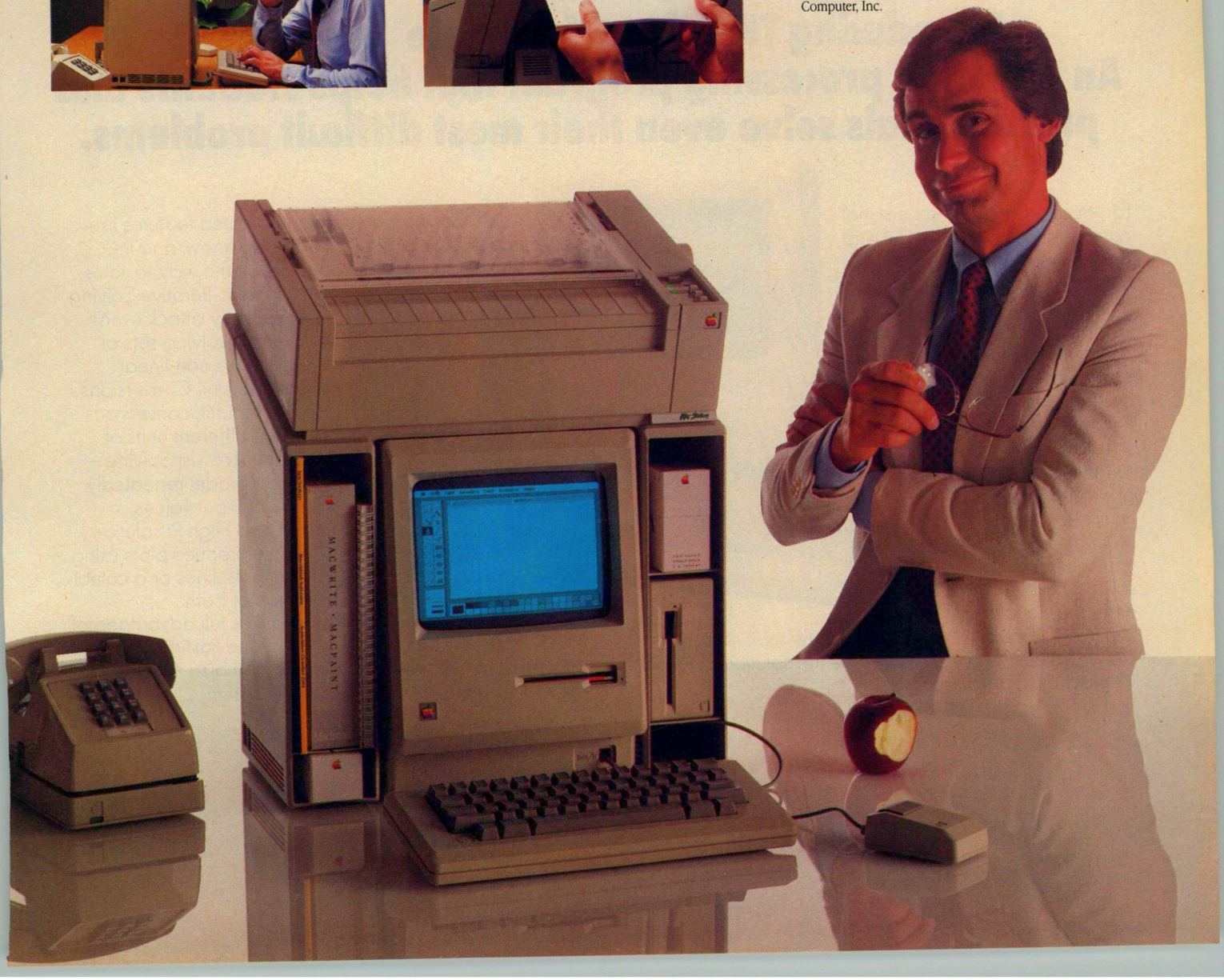

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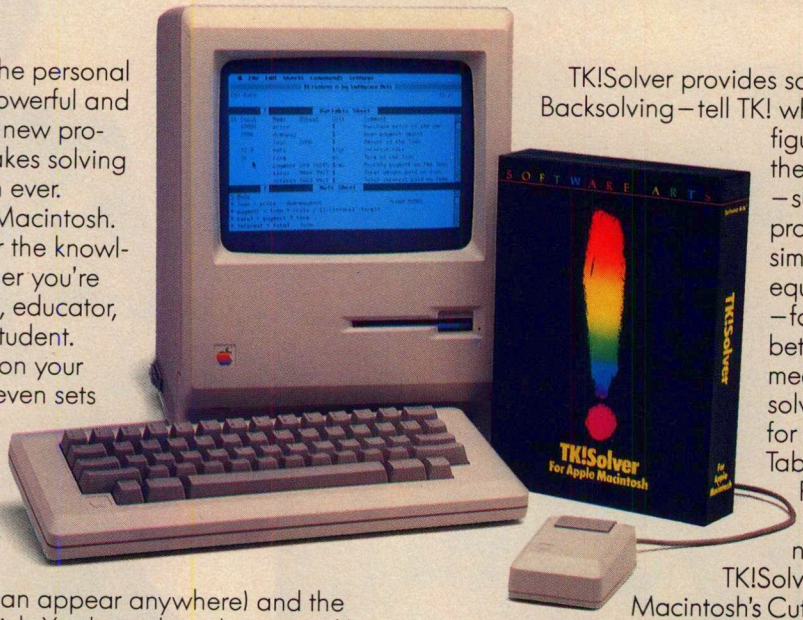

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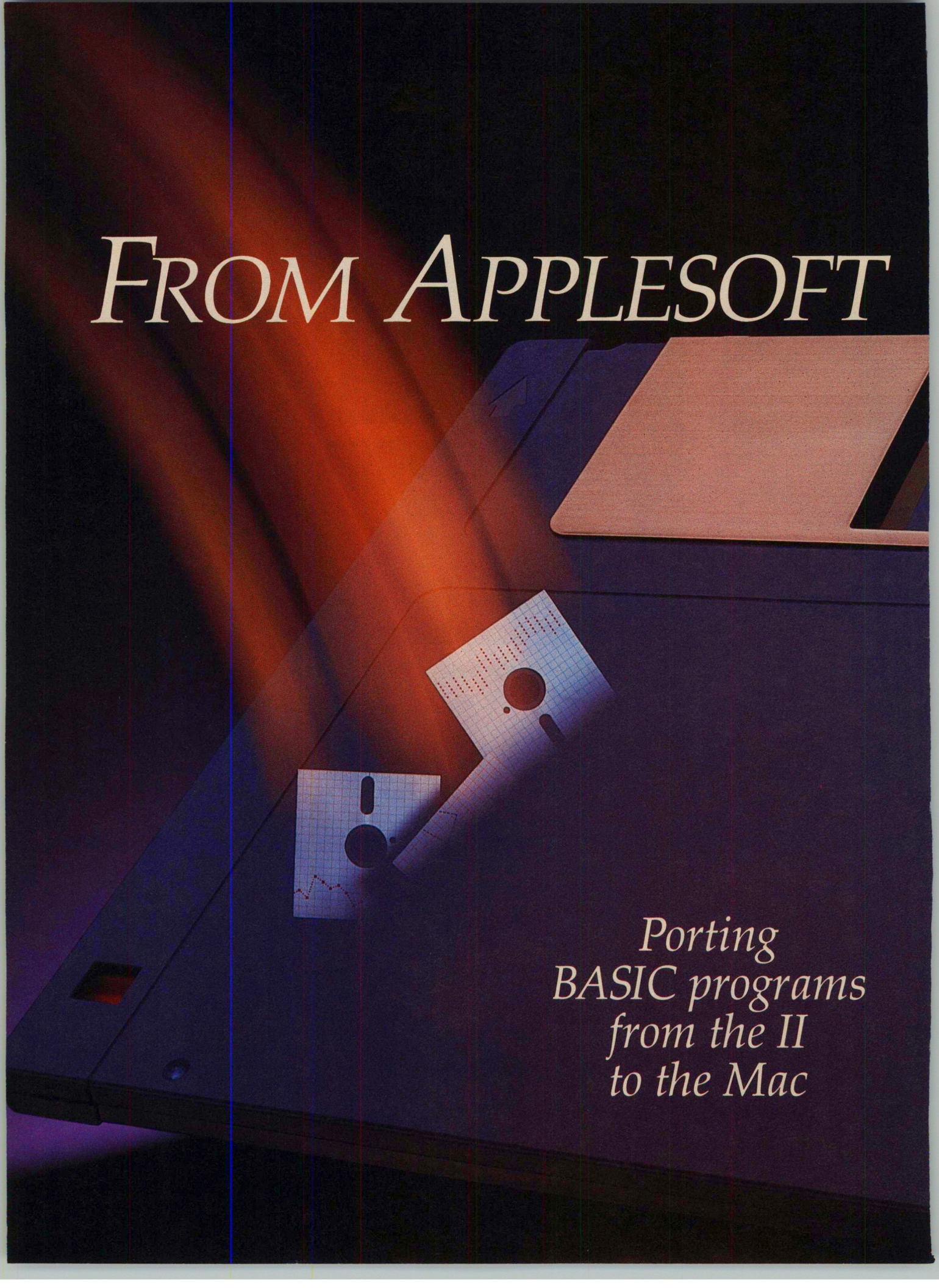

Porting BASIC programs from the II to the Mac

TO MS-BASIC

If you have made the step up from an Apple II to a Macintosh, chances are you want to convert some of your present Applesoft programs to run on the Macintosh. Besides having to modify the Applesoft commands and syntax to meet Macintosh requirements, you also have to type the programs in, a chore you can happily avoid by downloading them from the Apple II to the Macintosh through a serial-interface card.

In addition to the two computers, the serial-interface process has other requirements. Foremost among these is a serial-interface card that plugs into the Apple II. I used a California Computer Systems model 7710 serial-interface card, but similar cards should work as well. To hold down expenses, I used the Macintosh's Imagewriter printer cable. One end of the cable attaches to the Mac's modem port, the other to an adapter. Since the serial port in the Apple II and the Macintosh have the same configuration, an adapter reroutes the signals in the cable to the appropriate connections.

The adapter consists of two standard RS-232 connectors with a few leads soldered between them (see figure 1). In Radio Shack adapters, the DB-25P male connector is part number 276-1547, and the DB-25S female connector is part number 276-1548. The rather slow BASIC program limits the maximum transfer speed to about 300 bps (bits per second).

The program, to avoid errors, strips out lone carriage returns in the transferred program. Microsoft BASIC does not permit immediate commands in a program it is loading. Since it interprets a carriage return as an immediate command, a program that has a lone carriage return results in the error message DIRECT STATEMENT IN FILE.

An outline of the operations involved in the transfer follows:

1. Type the BASIC program in the listing that begins below into the Mac and save it. Type RUN to start the program, and some information about the program should appear on the screen. During execution, the program converts the Macintosh into a terminal so that whatever you type on the keyboard goes serially out of the modem port, and data coming into the modem port appears on the Macintosh's screen.

2. Type PR#2 and then IN#2 (assuming the serial-interface card is in slot 2) on the Apple II keyboard. This action disables the Apple II's keyboard and display and routes all input and output through the serial-interface card.

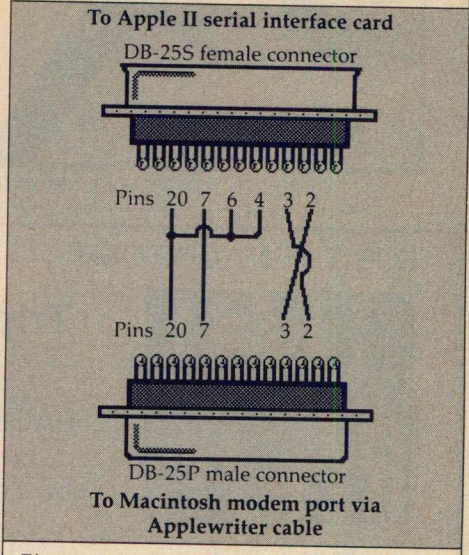

Figure 1: Apple II to Macintosh Adapter

3. At this point, the Apple II should respond to immediate commands—such as CATALOG, LOAD, LIST, and so on—that you type on the Macintosh.

4. When you first click the mouse in the Output window, the Macintosh asks for the name of the Applesoft program you want to transfer. After you enter the name of the program, the Macintosh gives commands to the Apple II to load and list the program. During the listing of the program, the Macintosh saves the individual lines in its memory. If an unexpected error occurs—such as getting a FILE NOT FOUND message from the Apple II because of an incorrect program

DAVID BISHOP

Apple II to Macintosh Program Transfer

```
10  REM ------------------------------------------------------------------------
20  REM  APPLE II to MACINTOSH program transfer
30  REM  Act as terminal until mouse is clicked
40  REM ------------------------------------------------------------------------
50  DIM A$(200) : REM   Maximum number of lines in Applesoft program
60  CLICKED = 0 : REM   Initialize as no mouse clicks
70  GOSUB 680 : REM   Initialize modem I/O parameters
80  CLS:PRINT "MACINTOSH should now act as a terminal"
90  PRINT "CLICK MOUSE in this area to initialize program transfer sequence"
100 REM ------------------------------------------------------------------------
110 REM  Get any characters from I/O port
120 IF LOC(1)=0 THEN 230 : REM   No incoming data
130 CH%=ASC(INPUT$(1,1)) AND MASK%
140 IF CH% = 10 THEN 120 : REM   Discard line feeds
150 PRINT CHR$(CH%);
160 IF NOT CLICKED THEN 230
170 IF CH% = 13 THEN 190 : REM   End of line?
180 A$(LN) = A$(LN) + CHR$(CH%)
185 GOTO 120
190 IF LEN (A$(LN)) = 0 THEN 120 : REM   Don't allow lone carriage returns
200 LN = LN + 1: GOTO 120
```

program listing continues on page 122

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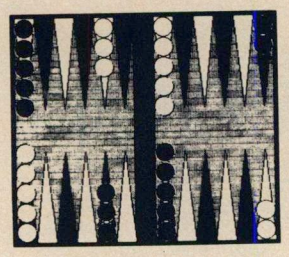
FOR THE MACINTOSH



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name—you will have to terminate the Macintosh program with a ⌘-C and then rerun it.

5. When the transfer of the program is complete, click the mouse in the Output window to save it. ✚

James E. Oslislo is a civil engineer who lives in Rahway, New Jersey. He has been involved with Apple computers since 1978.

Apple II to Macintosh Program Transfer, continued

```
210  REM  ------------------------------------------------------
220  REM  Check to see if mouse is clicked
230  X = MOUSE(0)
231  IF X <> 1 THEN 320 : REM   Mouse not clicked one time
240  IF CLICKED THEN 280 : REM   Second mouse click?
250  CLICKED = -1
260  GOSUB 380 : REM   Get program name and list it
270  GOTO 120
280  GOSUB 580 : REM   Save program to Macintosh disk
290  END
300  REM  ------------------------------------------------------
310  REM  Check for any keyboard input
320  K$=INKEY$
330  IF K$ = "" THEN 120 : REM   No keys pressed
340  PRINT #1,K$;
350  GOTO 120
360  REM  ------------------------------------------------------
370  REM  Get program name, load program, list program
380  PRINT "CLICK MOUSE again when program transfer is completed "
390  INPUT "Enter Applesoft program name: ",N$
400  S$ = "LOAD " + N$
410  GOSUB 470 : REM   load program
420  S$ = "LIST"
430  GOSUB 470: REM  List program
440  RETURN
450  REM  ------------------------------------------------------
460  REM  Send string S$ thru port and print on screen
470  S$ = S$ + CHR$(13) : REM   Tack on carriage return
480  FOR J = 1 TO LEN(S$) + 1
490   X$ = MID$(S$,J,1)
500   PRINT #1,X$;
510   IF LOC(1) = 0 THEN 510 : REM   Wait for echoed character
520   CH% = ASC(INPUT$(1,1)) AND MASK%
530   IF CH% <> 10 THEN PRINT CHR$(CH%);
540  NEXT J
550  RETURN
560  REM  ------------------------------------------------------
570  REM  Save Applesoft program to disk
580  OPEN "O",#2,N$
590  FOR J = 0 TO LN-1
600   PRINT #2,A$(J)
610  NEXT J
620  CLOSE #2
630  END
640  REM  ------------------------------------------------------
650  REM  Microsoft Macintosh I/O initialization
660  REM  Default parameters: 300 baud, 7 data bits, 2 stop bits, no parity, no
     handshake
670  REM  Define the communications hardware constants
680  NO.PARITY = 0: ODD.PARITY = &H1000: EVEN.PARITY = &H3000
690  STOP1 = &H4000: STOP1.5 = &H8000: STOP2 = &HC000
700  DATA5 = 0: DATA6 = &H800: DATA7 = &H400: DATA8 = &HC00
710  BAUD110 = 1023: BAUD300 = 380: BAUD600 = 189: BAUD1200 = 94:
     BAUD9600 = 1
720  REM  Open the Communications Port
730  OPEN "COM1:" AS 1
740  REM  Initialize the Macintosh communications hardware
750  DIM CODE%(68)
760  REM  Change the following for different baud rates, etc.
770  CODE%(41) = STOP2 + DATA7 + BAUD300 + NO.PARITY
780  MASK% = 255 : IF (CODE%(41) AND &HC00) <> &HC00 THEN MASK% = 127
790  FOR I = 0 TO 26: READ CODE%(I) :NEXT I
800  REM  Set CODE%(20) = 0 for neither xon/xoff or CTS handshake
810  REM  Set CODE%(20) = 1 for CTS but no xon/xoff handshake
820  REM  Set CODE%(20) = 256 for xon/xoff but no CTS handshake
830  REM  Set CODE%(20) = 257 for both xon/xoff and CTS handshake
840  COMINI = VARPTR (CODE%(0)): CALL COMINI
850  REM   machine language program to change settings
860  DATA 16890, 52, 12668, 8, 26, 12668, -7, 24, -24572
870  DATA 12668, -6, 24, -24572, 12668, -6, 24, 12668, 10
880  DATA 26, 8572, 0, 4371, 28, 17064, 32, -24572, 20085
890  RETURN
```

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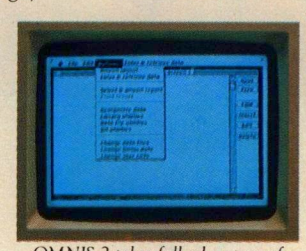

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Programming for the Rest of Us

Macintosh software development one year later

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When I first signed up as a book author to write about how to program the Macintosh, I received assurances that Apple would do everything in its power to speed me through my task. We talked about the book appearing in the spring of 1984. Boy, did we figure wrong.

Now, with two assemblers, at least three versions of the C language and two of Forth appearing, I can finally stop using my Lisa for Macintosh program development and at last introduce you Mac owners to a bit of programming. That's what we're about to do together: programming for the rest of us.

If you've followed previous columns, you'll probably remember that I spent a lot of time discussing the concept of resources. You're about to find out why.

Taking the Plunge

Our first programming project is a simple one, but space limitations mean that I have to split it into two parts. This month we'll tackle the resource file and the overall structure (flow of control) of the program; next month we'll examine the nitty-gritty details and look at the final code. We'll be doing our programming in assembly language this time, but I promise to keep it simple.

The program we'll be developing is extremely simple: We're going to display a dialog box with two buttons on it (see figure 1). Depending on which button you click your mouse in, another dialog box will appear. Eventually we'll add other features to this program, such as its own menu bars, some doodling space for you graphic types, and perhaps a bit of text manipulation.

Seems pretty simple, doesn't it? Consider how many steps you'd have to go through if you didn't have the Macintosh's toolbox at your disposal, though. (1) You'd have to draw all the boxes a line at a time, meaning you'd have to know every corner location; (2) you'd have to draw a button around the text that was to appear inside it; (3) you'd have to preserve the background area that the dialog box covered so that you could restore it later; (4) you'd have to write routines that let you move the dialog box by dragging its title bar across the display; and (5) you'd have to change the area being preserved and restore portions of the background as the dialog box moved.

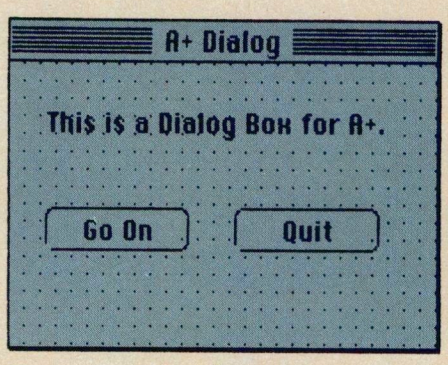


Figure 1: Displaying a dialog box

Each of these operations is a minor programming feat in itself. The steps involving box movement would require particular attention if the user wanted to have a feeling of control over the movement.

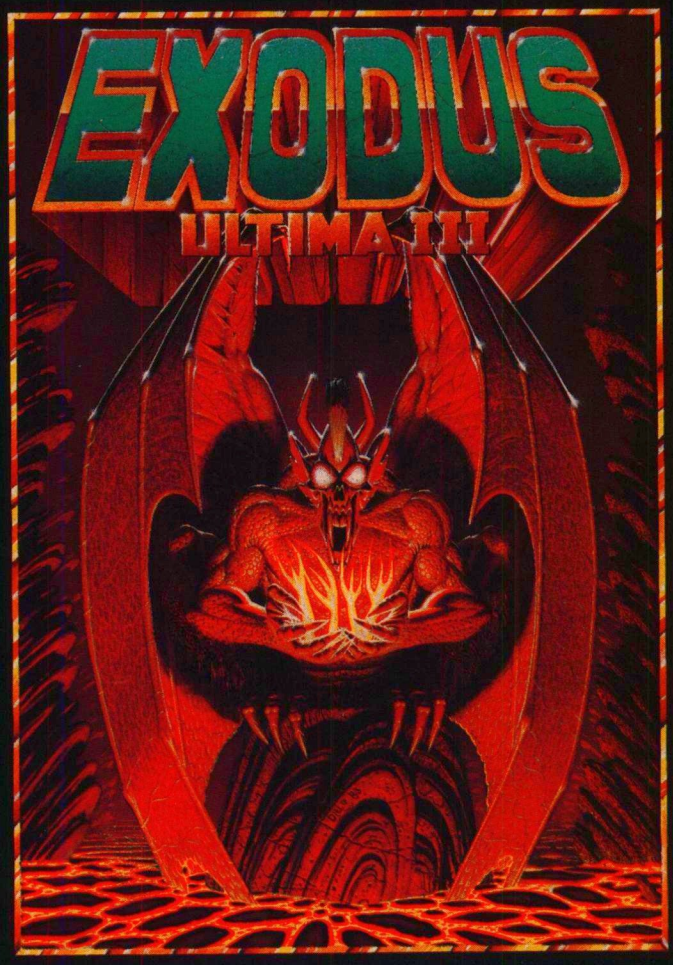
Indeed, the Mac's toolbox routines for dragging objects such as a dialog box involve critical timing interrupts for the video-display refresh (the video-refresh rate is the time it takes for the electron beam that creates the display to get from the lower right corner to the top left corner of the display to start a new trace line). I doubt that many potential Macintosh programmers are ready to deal with such details; I know I'm not.

Instead of making you go through all of these troublesome steps, the Macintosh can reduce your programming task to two steps: (1) Determine the size and location of the dialog box and prepare the text that is to appear in it and (2) write the program.

Reducing our task to this two-step process may seem like an oversimplification, but it really is that easy. Let's look at each step more closely.

Our first step is to determine all as-

"A LIVING TAPESTRY . . ."



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pects of the dialog box we're going to create. The upper left corner of the Macintosh screen is called position 0,0. Position numbers increase 1 pixel horizontally and vertically until we reach the maximum (512 horizontal and 342 vertical pixels). Actually, we'll eventually learn that the "potential" Macintosh screen is much larger than this.

If we want a dialog box to take up about one-third of the screen vertically and one-third horizontally and to be located approximately in the center, the upper left corner is at position 114 vertically and 170 horizontally, and the lower right corner is at 228,340.

Good, we're almost done with step 1. Now all we have to do is determine what text goes in the box, where it goes, and where our two buttons are going to be placed. Figure 2 is a resource file that fully defines our dialog box. Create this file with the editor that came with the assembler; then run it through the RMAKER program to create something our program can use. (Note: The last portion of the resource file is kind of cryptic; for now, let's just say that it puts the eventual program code into the resource file so that we generate only one file for our program, instead of two.)

Preview

Step 2 is to create our program. We'll deal with that step in detail in next month's installment, but for now let me summarize what's ahead:

1. Initializing the toolbox managers we're going to be using.
2. Opening the dialog box we just created and displaying it.
3. Looking at the mouse's position to determine whether it is in the menu bar, in the title bar, or in either of the buttons.
4. If the mouse is in one of the above locations and the button is down, performing the appropriate action.

That's all we have room for this month. Stay tuned for part 2, only 30 days away. +

Thom Hogan is the editor-in-chief of Business Software *and has written numerous computer books, including* InfoWorld's Essential Guide to the Apple II.

A+ Resource File

```
A+                          ;;file name is going to be A+.Rsrc
APPLXXXX                    ;;file type is APPL (application),  no
                            ;;    program linked to it (XXXX)


Type DLOG                   ;;our Dialog Box resource definition
   ,256                     ;;we're making it dialog number 256
A+ Dialog                   ;;its title is A+ Dialog
114 170 228 340             ;;upper left, lower right coordinates
Visible NoGoAway            ;;it is visible, but no close box
0                           ;;not needed
0                           ;;not needed
256                         ;;DITL #256 contains items to be put in box

Type DITL                   ;;our Dialog Item List for the box, above
   ,256                     ;;we're making it dialog list 256
3                           ;;there are 3 items in our list

StaticText                      ;;first item is non-movable text
134 175 154 335                 ;;located at these coordinates
This is a Dialog Box for A+     ;;and consisting of this text

Button                      ;;second item is a button
178 175 198 215             ;;located at these coordinates
Go On                       ;;with this text inside

Button                      ;;third item is a button
178 295 198 335             ;;located at these coordinates
Quit                        ;;with this text inside
```

Figure 2: A resource file that fully defines the dialog box

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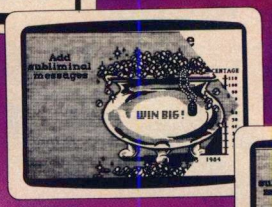

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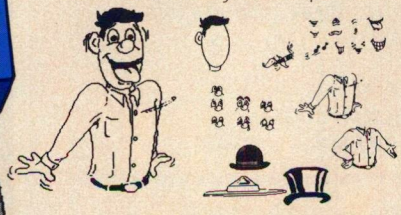

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CIRCLE 214 ON READER SERVICE CARD

MACTYPE FROM PALANTIR. THE TYPING TUTOR THAT IS

F

FIRST

Palantir knows that if your Macintosh™ is to be fruitful, you must first conquer the keyboard. And for many, that means learning how to type. So, Palantir created MacType. It's the first typing tutor for the Macintosh to put to use benefits of proven teaching techniques that speed up learning. Simply, MacType uses mental patterning to reinforce manual exercises. It teaches your fingers and your brain rather than your eyes, and you learn more quickly. If one of your first tasks on the Macintosh is to learn how to type, think of MacType first.

A

ADVANCED

Palantir designed MacType to be the most advanced typing tutor for the Macintosh that is available today. MacType takes full advantage of Macintosh's flexible screen displays and the simple functioning of its mouse to teach you how to type. All the know-how that has gone into the most complex Palantir Software was used in the development of MacType. You're getting state-of-the-art technology even in this basic program. It takes advanced skill to create a fundamental program that is both fun and mental for the user. And you get MacType's advanced features at a price that is very competitive.

S

SIMPLE

Palantir has also designed MacType so that it is amazingly simple to learn and use. Because of the teaching principles inherent in the program, you will get up to an effective typing speed in a very short time. You can also use the skills you learn on MacType to operate any typewriter keyboard, not just the Macintosh. Compared to the other typing tutors, MacType will actually let you enjoy learning. You may like it so much that even after you've mastered its touch-typing technique, you'll go back to the MacType exercises to sharpen your skills and increase speed. MacType shows that working smart can be working simple.

T

TESTED

Palantir thoroughly tested MacType to insure that it will work for you. With it you will learn to type fast. MacType should be your first choice. It is based on advanced programming technology and is still simple to learn. MacType is another quality, "No Bull" product from Palantir. If you want to learn more, contact

PALANTIR® SOFTWARE

MACTYPE™ TYPING TUTOR

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- Documentation (includes information on Hippo-C and selected Toolbox and QuickDraw routines) and sample programs.
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CIRCLE 396 ON READER SERVICE CARD

Henderson Associates, 980 Henderson Ave., Sunnyvale, CA 94806
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CIRCLE 138 ON READER SERVICE CARD

MacTips

Suggestions from our readers

MS-BASIC FONT SIZE

Microsoft BASIC allows you to select the font type and size in the output window with Textfont and Textsize. Unfortunately, you have no control on the type used in the List and Command windows—it is always Geneva 12 (New York 12 if you have the original System).

Why would you want to use a different font? First, Geneva is a proportional font, so the spacing and column alignment of text in PRINT statements is different from the way they will appear when you print them on the Imagewriter. Second, with three windows on the screen, I find Geneva 12 clear but bulky. Monaco 9 displays more text and enables you to use and edit longer lines. You can change the font and size in all three windows to Monaco 9 with a single short command:

```
POKE &H985,4:POKE &H987,9
```

&H985 is the system global location ApFontID and defines the current "application font," in this case 4 for Monaco. &H987 is FMDefaultSize, the default font size for everything, in this case 9 for 9 point.

Be careful, though. These pokes change the default type size for *everything*—including the window titles, menu items, and dialog boxes—and, unfortunately, Chicago looks terrible when it is scaled down to 9 point. These poke locations work with the May 2 version of the system on a 128K Macintosh, but they don't necessarily work with anything else.

Daniel P.B. Smith

SCRAPBOOK LIBRARY

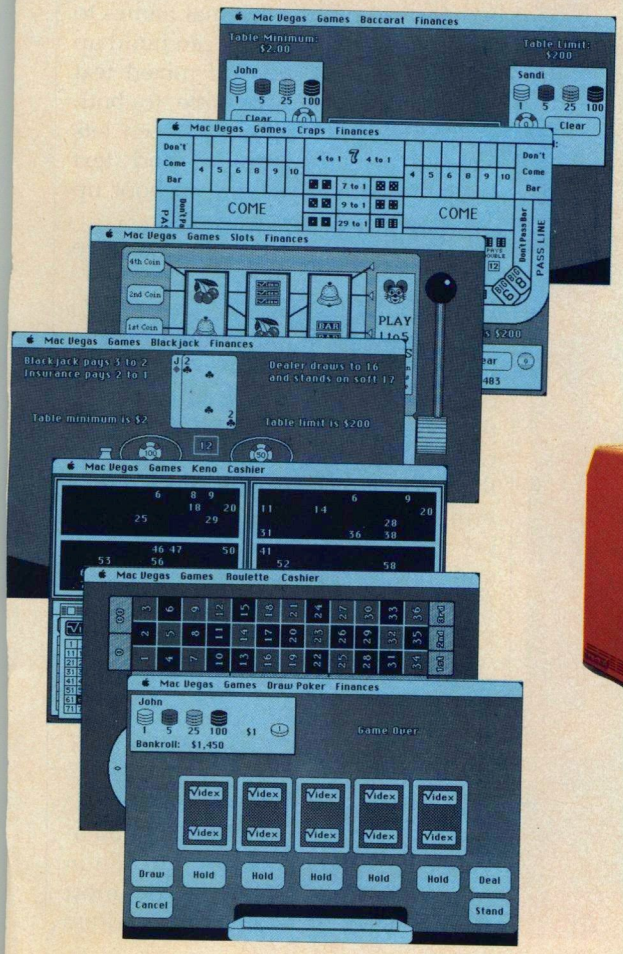
You can build a library of Scrapbook files arranged by type and topic.

If you are anything like me, you build files heedlessly, without much thought about where to put them. After the fact, you find, scattered around in various diskettes, useful text and pictorial items that should be available and handy, but aren't. Moreover, if you think about it a bit, you have various themes and/or types of items that you could group together. Perhaps you've even begun to assemble them on various data diskettes or in the Scrapbook.

Accessing Scrapbook items on the Mac is not particularly quick, though, and scrolling through a large Scrapbook filled with miscellaneous material is an annoying procedure.

A better approach is to build up some topical Scrapbook files. First, remove all items from a Scrapbook to a disk that has a relatively empty Scrapbook. Then exit to the desktop and open the System folder. Go to the File menu and duplicate (with Command-D) the now empty Scrapbook file. Rename it something descriptive, such as EmptyScrapbook.

Now you can fill the working Scrapbook file with



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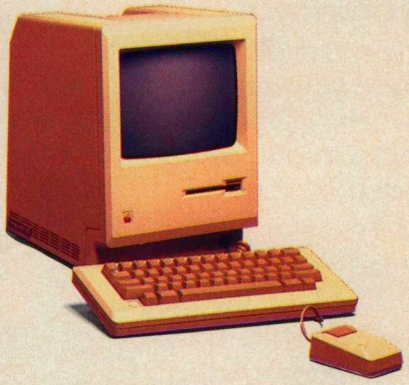

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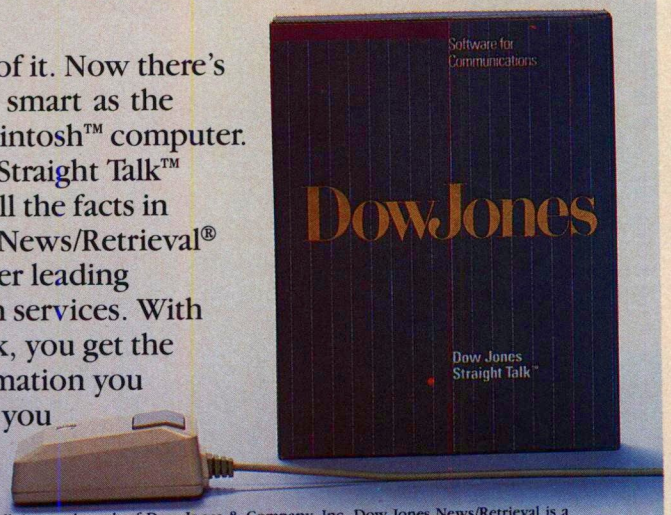
CIRCLE 142 ON READER SERVICE CARD

Introducing Dow Jones Straight Talk™

Now there's smart software™ for the Macintosh.

Think of it. Now there's software as smart as the Apple® Macintosh™ computer. Dow Jones Straight Talk™ offers you all the facts in Dow Jones News/Retrieval® and the other leading information services. With Straight Talk, you get the exact information you need when you need it.



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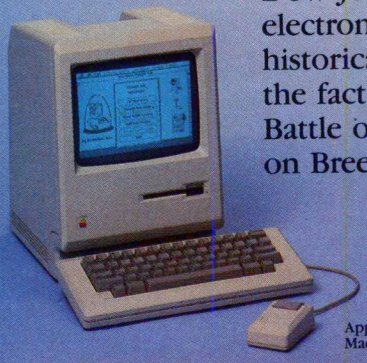
CIRCLE 384 ON READER SERVICE CARD

Get an "A" on your Paper.

It's one o'clock in the morning. Your term paper on the American Revolution is due at 8 a.m. Where was the misnamed Battle of Bunker Hill *really* fought? It could be the difference between an "A" and a "B".

Now there's smart software™ for the Macintosh™ computer.

With Straight Talk, the smart software from Dow Jones, you can use an electronic encyclopedia to find the historical fact you need. Even if it's the fact that on June 17, 1776 the Battle of Bunker Hill was fought on Breed's Hill.



Dow Jones Straight Talk™

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CIRCLE 385 ON READER SERVICE CARD

MacTips

topical or theme items at your leisure. When it is large enough or has everything you wish to include on that theme, exit to the desktop. This time, rename the Scrapbook file according to its contents—Letterheads, for example.

Again duplicate the EmptyScrapbook file and name it Scrapbook. At this point, you have three system Scrapbook files on hand: one, now empty, called Scrapbook; one full, called Letterheads; and the last, still empty, called EmptyScrapbook. Using this process, you can build up many files filled with useful pictures and text and named according to your own system of classification. Accessing the files is as simple as renaming two files on the Desktop. Simply rename the current Scrapbook something to remind you that it is the working Scrapbook, perhaps SB.WORKFILE, and rename the file you wish to access temporarily as Scrapbook.

You can then go in and copy and cut to your heart's content. When you exit, just restore the original names to the files. In this way, you can build up quite a useful archive of mixed text and pictures, all accessible to both MacWrite and MacPaint, which lets you have both graphics and text available without having to boot up the appropriate application.

Scott Locicero

PRINT QUEUING

Printing several MacWrite or MacPaint documents is simple: On the desktop, click on the document icon that you want to print first. Then, holding down the Shift key, click on the document icon that you want to print next. Continue on in hierarchical order. Pull down the file menu and release the mouse button on Print. The selected documents will print in the order they are selected, without user intervention.

Leigh Standish, President
Standish Associates
Hartford, CT

A MACWRITE ADDRESS FILE

For those who don't yet have a database program, the Search function in MacWrite gives all the power most people need, at least for an address

MacTips

file. First, set up your file just as you want it to look. To find a specific entry, position the cursor at the beginning of the text; pull down the Search menu; select Find; and enter, for example, a first name. MacWrite searches for a match and, when it finds it, shows it in the middle of the screen. If that entry isn't the right one, just press Return and MacWrite searches for another match. If no match is found by the end of the file, MacWrite displays a dialog box with that information.

Norman T. Thorsen
Poulsbo, WA

FILE-SEARCH FEATURE

When an open dialog box in such programs as MacWrite, MacPaint, and Multiplan invites you to select a file, you normally have to scroll through the box looking for the file you want. If you already know the name of the file or the first letter, however, you can go directly to the files that begin with that letter by simply touching the appropriate key on the keyboard. Touching *K* when the open dialog box is on the screen, for example, highlights the first filename that starts with *K*. Pressing the Tab or Backspace key takes you to the beginning of the file list.

Robert Snowdon Jones
Decatur, GA

PAPER SAVER

Often when you're printing more than one copy of a document, the printer feeds an extra page between copies. To avoid this problem, fill in the first and last page numbers under Page Range when the Print dialog box appears.

Trish DeRobertis Anargirou

REMOVE THE PRINTER ICON

MacPaint does not use the Imagewriter icon to print. On a single-drive system you can save disk space and swapping if you put MacPaint on a disk by itself. The disk should, of course, have the System Folder containing the System, Finder, Clipboard, Notepad, and Scrapbook icons, but omit the Imagewriter icon and save 17K of disk space!

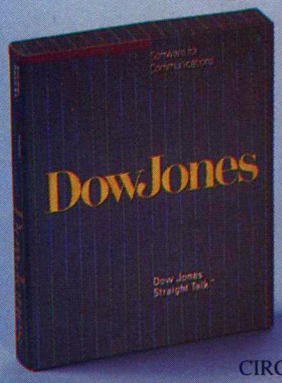
Don W. Strickland
Austin, TX

Get that Big Promotion.

In half an hour, your boss is due to finalize a merger with a company you have doubts about. His career rides on this deal. How can you change his mind before it's too late?

Now there's smart software™ for the Macintosh™ computer.

With Straight Talk, the smart software from Dow Jones, you can get the lowdown on a company without ever leaving your office. You might even discover a revealing fact that saves your boss's job and earns you a new one.



Dow Jones Straight Talk™

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See Straight Talk at your Macintosh™ computer dealer or call: 1-800-345-8500 ext. 272 for further information.

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CIRCLE 383 ON READER SERVICE CARD

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Now you can spell check your Macintosh™ documents with the click of a mouse.

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Select one:
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+ **Spelling Checker:** An interactive program that will enable you to proof documents without leaving your word processing program; Contains a dictionary with over 30,000 words and provision for you to add over 2,500 words of your own
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8. Bond Yield to Maturity
9. Calendar (days between dates, etc.)
10. Desk Accessories Editor

ORDER TODAY OR SEE YOUR DEALER!!

Creighton Development, Inc. 4931 Birch Street, Newport Beach, CA 92660

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CIRCLE 234 ON READER SERVICE CARD

Feed your Mac.

Introducing ThunderScan.™

Now you can turn any printed image into a detailed, high-resolution Macintosh graphic.

Just roll your original into your Imagewriter.

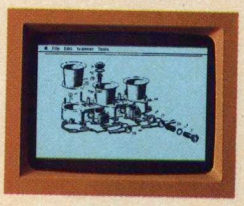
ThunderScan scans and digitizes the image.

Presto! A high-resolution MacPaint document.

No doubt about it, Macintosh is one great graphics machine. But until now, Mac graphics have been limited to what you can draw with a mouse and what someone else has put on a disk. Consequently, taking full advantage of Mac's graphics capabilities has been tough. But now there's ThunderScan. The new optical scanning device that lets you feed your Mac a steady diet of graphics that are useful to you.

ThunderScan turns Mac's Imagewriter printer into an image reader. So you can digitize any printed image and turn it into a detailed, high-resolution MacPaint document. Anything, including forms, half-tones, photos, mechanical drawings, maps, floorplans, logos, signatures and more. From black and white and color originals. ThunderScan reproduces them at over 200 dots per inch and in 32 shades of gray.

ThunderScan's application software, written by Mac-team-member, Andy Hertzfeld, makes it an extremely versatile and useful tool. You can generate full-page images or selected parts of them. Enlarge and reduce them. Manipulate them. Control the contrast and brightness. Create your own personal image disk. "Cut" and "paste" images together, creating new documents. And print them out on your Imagewriter. Or send them by modem to another Mac. The possibilities are nearly endless.



No lights, no camera, just action.

What you see here is the complete ThunderScan system. You don't have to buy an expensive video camera. Just pop out your Imagewriter's ribbon cartridge, snap in ThunderScan and you're set. It can even work in the dark (maybe you can think of an application for that).

If you bought a Mac at least partly for its graphics, only to find you couldn't take full advantage of them, now you can. With ThunderScan. At an introductory price of just $229, it's a small price to pay for a whole new graphics capability.

For more information or a ThunderScan of your own, see your dealer or call us today.

(415) 254-6581

ThunderScan

Thunderware Inc., 19 G Orinda Way, Orinda, CA 94563

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CIRCLE 228 ON READER SERVICE CARD

II SERIES

▸ KALEIDOSCOPE SERIES, DISCOVERY PORTFOLIOS

Discover Your Baby: Birth to Two Years, and Discover Your Child: Two through Five Years, the first two Discovery Portfolios in the Kaleidoscope Series from The BHT Group, are now available. Each package contains a Discovery Diskette and a Discovery Book. Using the program, parents answer questions about their child's current behavioral patterns and skills in four key areas of development. Based on the answers, the computer displays the child's Development Profile and recommends activities contained in the Discovery Book. The Discovery Diskette organizes records in its Records, Growth Charts, Memories, and Milestones sections. *(List Price: $69.95)*

Requires: Apple II, II Plus, IIe, or IIc; 48K RAM; one disk drive

The BHT Group
883 Stierlin Road
Mountain View, CA 94043
(415) 960-3170

CIRCLE READER SERVICE NO. **850**

II SERIES III MAC

▸ NEW PRODUCTS FROM PRACTICAL PERIPHERALS

The DES 2000 Data Encryption System is a standalone unit that can encrypt and decrypt data, using the NBS Data Encryption Standard, to provide users with security when they store and transmit confidential information. The DES 2000 offers two modes of operation (local and communication) and three levels of security and supports four levels of encryption. The unit allows only authorized users to access an online computer and can control entry to files within the host computer.

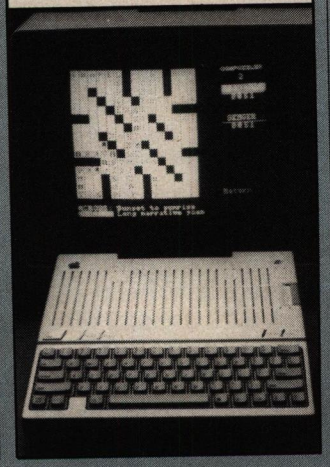
Practical Peripherals has also introduced a new line of Microbuffer printer buffers, which enable users to perform other tasks while the Microbuffer handles the printing of data. The new models include the Microbuffer In-Line Serial and the Microbuffer In-Line Parallel units. Both have an available 32K or 64K RAM, expandable to 256K. The Microbuffer II and II/S are Centronics-compatible, and they are RS-232C-type interface cards for the Apple II series of computers. They offer 32K on-board RAM for data buffering, as well as on-board firmware for text formatting.

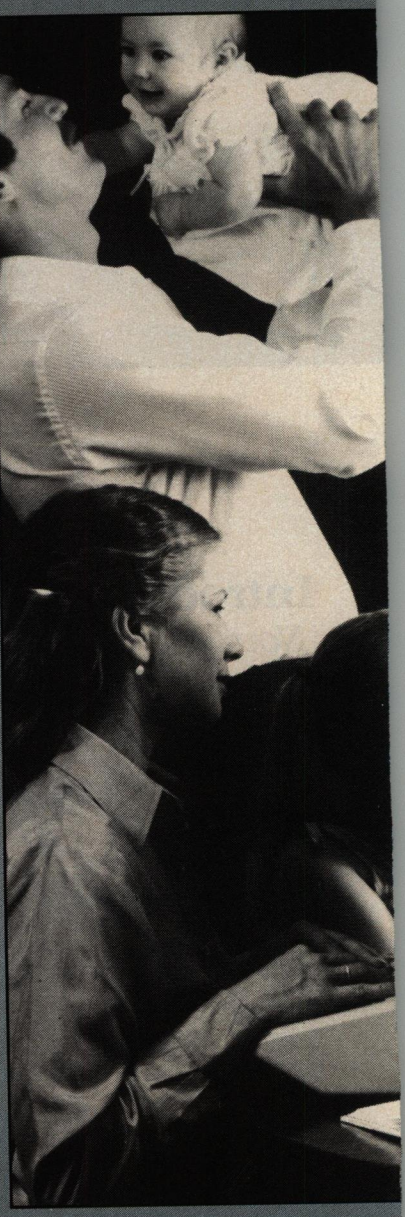
Microbuffer II+ has both serial and parallel output ports, which are hardware- or software-selectable; 143 text-formatting commands; and nine graphic-dump commands. It is available in 16K, 32K, and 64K memory sizes. The Microbuffer E series includes intelligent, buffered interfaces that fit inside the entire line of Epson printers.

Four other interface cards have been announced by Practical Peripherals. SeriALL is an RS-232C serial-interface card that is fully compatible with Apple's Super Serial card. It features comprehensive onboard text, graphics, and communications software for use with printers, plotters, modems, and external video terminals.

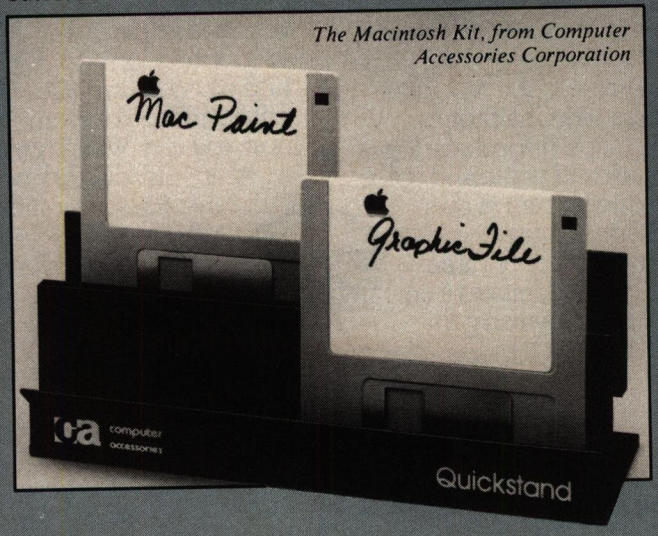
Printerface, an intelligent interface for Apple II computers, is compatible with DOS, Pascal, and CP/M and supports all Centronics-compatible printers. It also features ex-

Compuzzler is a full-color, crossword-puzzle game for one to four teams.

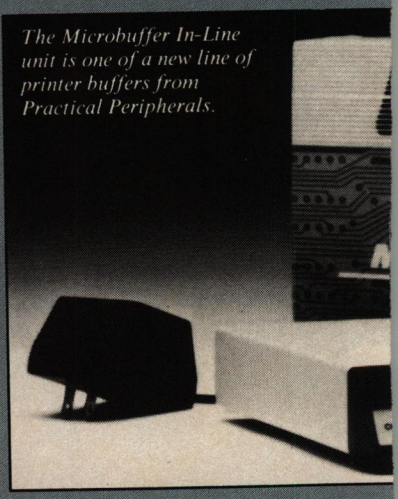




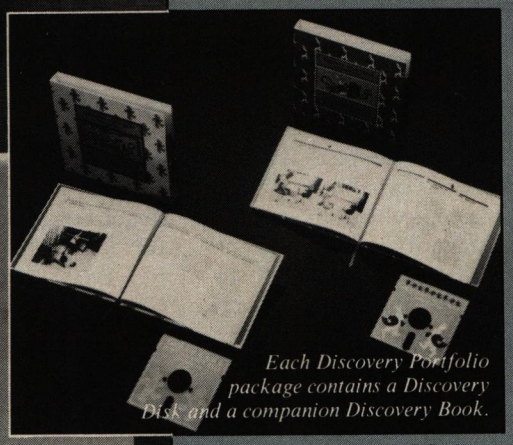
The Macintosh Kit, from Computer Accessories Corporation



The Microbuffer In-Line unit is one of a new line of printer buffers from Practical Peripherals.



The Discovery Disk enables parents to monitor their children's developmental progress.



Each Discovery Portfolio package contains a Discovery Disk and a companion Discovery Book.

tensive text commands.

An intelligent interface for Apple II and IIe computers, Graphicard features extensive graphics and text-formatting features that are compatible with DOS, Pascal, and CP/M, and it is also compatible with the Apple Parallel Card.

The Proclock Clock/Calendar Card is designed to work with ProDOS, but it can function with DOS 3.3, as well as Apple Pascal and CP/M. The card emulates Apple Clock, Superclock II, and Thunderclock Plus. *(List Price: DES 2000, $459; Microbuffer In-Line Serial and In-Line Parallel—32K, $299; 64K, $349. Microbuffer II and II/S—16K, $199; 32K, $219. Microbuffer II+—16K, $259; 32K, $299; 64K, $349. SeriALL, $159; Printerface, $75; Graphicard, $99; Proclock, $159)*

Requires: DES 2000 and In-Line Serial require Apple II, II Plus, IIe, IIc, III, or Macintosh; all other products require Apple II, II Plus, or IIe

Practical Peripherals, Inc.
31245 La Baya Drive
Westlake Village, CA 91362
(818) 991-8200

CIRCLE READER SERVICE NO. **851**

II SERIES

▸ COMPUZZLER

Compuzzler is a full-color, crossword-puzzle computer game that one to four teams can play. Each team occupies one corner of the board and branches, either down or across, from its corner—teams can thus block other teams' progress. Players must beat the clock as they take turns. Each disk contains 70 easy, intermediate, and advanced puzzles. *(List Price: $39.95)*

Requires: Apple II, II Plus, IIe, or IIc

Uptown Software, Inc.
310 Franklin Street
Suite 339
Boston, MA 02110

CIRCLE READER SERVICE NO. **852**

MAC

▸ MACINTOSH ACCESSORY KIT

The Macintosh Kit includes the MouseMat, which duplicates screen proportions and provides a nonslip surface for the mouse, and the QuickStand, which allows convenient access to Macintosh diskettes.

The MouseMat has a textured top surface that heightens mouse efficiency. The bottom surface is covered with a nonslip rubber that creates a firm grip on the desktop surface.

The QuickStand, a two-level, slotted diskette holder, allows easy working storage for up to four Macintosh diskettes. *(List Price: $29.95)*

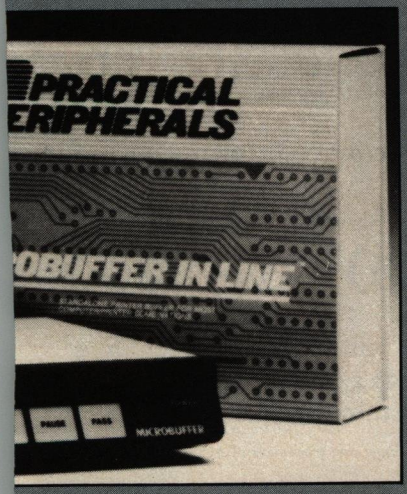
Requires: Macintosh

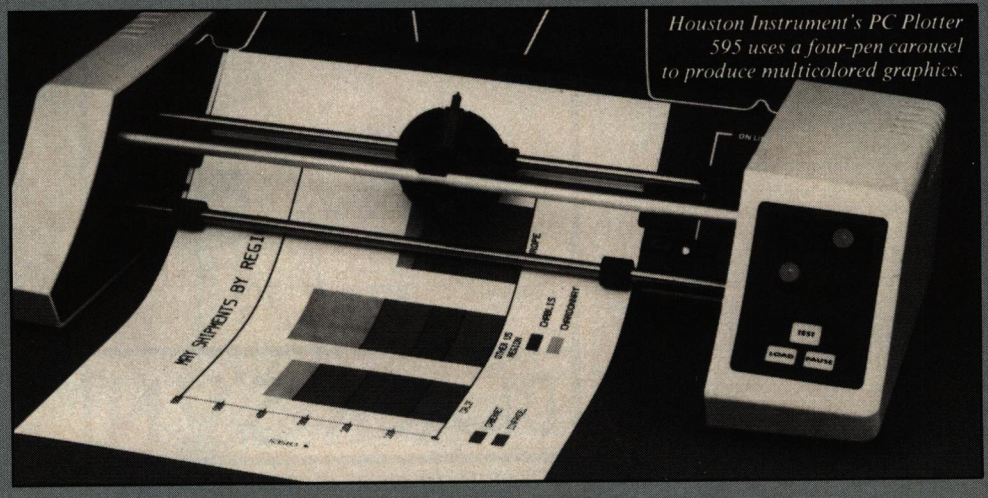
Computer Accessories Corporation
7696 Formula Place
San Diego, CA 92121
(619) 695-3773

CIRCLE READER SERVICE NO. **853**

▸ PC PLOTTERS

Houston Instrument's multipen PC Plotter features a four-pen carousel that allows you to produce multicolored graphics on either quality bond paper or over-





Houston Instrument's PC Plotter 595 uses a four-pen carousel to produce multicolored graphics.

head transparencies. Each plotter has the plotting language DM/PL built in, which enables it to work with hundreds of commercially available graphics software packages. Two models of the plotter are available: the PC Plotter 595 can produce 8½ × 11-inch graphics, and the PC Plotter 695 produces both 8½ × 11-inch and 11 × 17-inch graphics. Both models work with any computer that has an RS-232C interface. *(List Price: PC Plotter 595, $595; PC Plotter 695, $695)*

Houston Instrument
P.O. Box 15720
Austin, TX 78761
(800) 531-5205
in TX (512) 835-0900

CIRCLE READER SERVICE NO. **854**

▶HARDWARE

II SERIES

▶SERIAL GRAPPLER

A serial version of the Grappler+ printer interface, the Serial Grappler features more than 25 firmware commands for control of screen text and graphics and a new Transparency command that allows users to bypass all firmware when they use software that doesn't work well with the Grappler's logic. An additional add-on buffering unit, the Bufferpak, which provides an extra 16K to 64K of printer memory, plugs directly onto the Serial Grappler and doesn't require an additional computer slot. *(List Price: Serial Grappler, $119; Bufferpak, $145)*

Requires: Apple II, II Plus, or IIe

Orange Micro, Inc.
1400 North Lakeview Avenue
Anaheim, CA 92807
(714) 779-2772

CIRCLE READER SERVICE NO. **855**

MAC

▶MAC488 IEEE 488 BUS CONTROLLER

The Mac488 bus interface for the Macintosh computer provides complete IEEE 488 bus capability, including controller, talker, and listener functions. The controller connects directly to the Macintosh's serial port but does not prevent you from using a printer simultaneously. Commands are similar to those of the Hewlett-Packard 85 computer,

and driver routines are available for languages including BASIC. The Mac488 enables the Macintosh to communicate as a peripheral with other 488 bus controllers. *(List Price: $595)*

Requires: Macintosh

IO tech, Inc.
P.O. Box 21204
Cleveland, OH 44121
(216) 321-0609

CIRCLE READER SERVICE NO. **856**

RENT SOFTWARE

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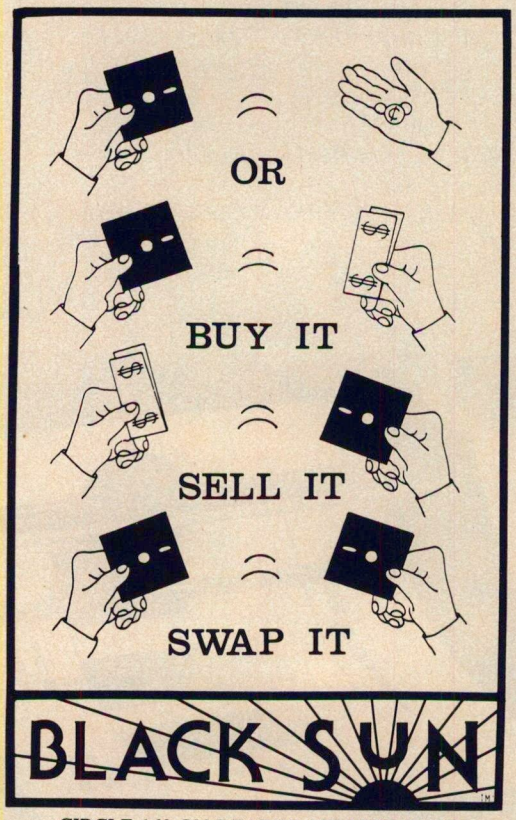

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or write

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CIRCLE 160 ON READER SERVICE CARD

Introducing Typing Intrigue.™

Now there's hope even for executives hardened by years of typophobia, arcade-shocked junior high school students, and anyone else who needs to get all ten fingers working together, at last.

Typing Intrigue takes the drudgery out of improving your typing skills. It makes learning to type enjoyable, so you'll stay with it. And that makes it really *effective.*

Like a truly professional teacher, Typing Intrigue adjusts itself to your level. It recognizes you (and up to 5 other "pupils") and designs its lessons accordingly, recording your progress from session to session. It's never repetitive, never boring, and keeps you motivated.

As your skill improves, you earn clues toward solving *The Case of the Missing Bathtub.* Where might one hide a £50,000 onyx and gold antique tub? And why? How are Reginald Chumley and Lady Deirdre Dunsmire involved? Where did the worn elbow-patches come from? Do those rumors about Lord Southby mean anything?

By the time these characters help you break the case, you'll be typing at breakneck speed.

You can also improve your typing skill with a second game option—*Rain*—a fast-moving, arcade-type challenge for those who like more action.

Of course, you don't have to brave a thunderstorm or get involved with Inspector Hargreaves' puzzling bathtub case if you choose to just roar through the typing exercises undiverted. But who can resist a good thriller?

Contact your Macintosh™ dealer, or call 1 800 MACWARE to find out where you can get Typing Intrigue.

From Forethought, Inc.

MACWARE™

CIRCLE 126 ON READER SERVICE CARD

These characters can teach anybody to type.

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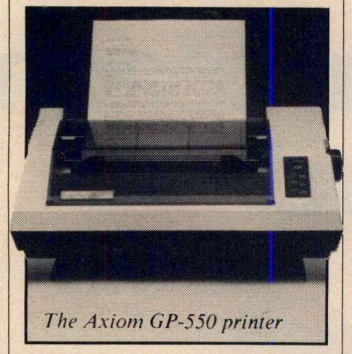
II SERIES

▸ AXIOM GP-550 PRINTER

The Axiom GP-550's two-hammer design enables the single unit to produce both standard dot-matrix and near-letter-quality printing. In its Draft mode, the Axiom GP-550 uses a 9 × 8-dot matrix, operates at 86 cps, and offers six character sets. The printer's Near Letter Quality mode uses a 9 × 16 dot-matrix, operates at up to 43 cps, and has 12



The Axiom GP-550 printer

additional character sets. Other features include quiet performance, 140 characters, a cassette-type ink ribbon, and an optional built-in interface for many popular personal computers. *(List Price: standard model, $299; built-in-interface model, $319)*

Requires: Apple II or IIe

Axiom Corporation
1014 Griswold Avenue
San Fernando, CA 91340
(818) 365-9521

CIRCLE READER SERVICE NO. **857**

MAC

▸ THUNDERSCAN

ThunderScan is a high-resolution digitizer that lets Macintosh users turn printed images into MacPaint documents. ThunderScan can digitize documents, photographs, drawings, or any other printed material that will feed through the Imagewriter printer.

To digitize an image, you temporarily replace the Imagewriter's ribbon cartridge with the ThunderScan optical scanning device, put the printed material into the printer, and run the ThunderScan application software.

Using ThunderScan, you can digitize images measuring up to 8 × 10 inches to resolutions exceeding 200 dots per inch, with 32 levels of gray scale. You have control over brightness, contrast, and a zoom feature that lets you enlarge or reduce the digitized images. *(List Price: $229)*

Requires: Macintosh

Thunderware, Inc.
19-G Orinda Way
Orinda, CA 94563
(415) 254-6581

CIRCLE READER SERVICE NO. **858**

II SERIES

▸ SWEETTALKER II

Based on the SSI 263 chip, Sweettalker II is a third-generation speech synthesizer that provides analog output for music, sound effects, and continuous speech. Features include 256 phoneme equivalents, 4096 pitch variations, and an on-board one-watt amplifier with volume control. Five eight-bit internal registers let you set phoneme values dynamically. The Sweettalker II operates on a 5- or 12-volt power supply and also has control inputs for connection to various computer buses or to a parallel port. *(List Price: $104)*

Requires: Apple II Plus or IIe

Micromint, Inc.
561 Willow Avenue
Cedarhurst, NY 11516
(516) 374-6793

CIRCLE READER SERVICE NO. **859**

II SERIES

▸ NEW SAKATA PRODUCTS

Sakata has introduced the SC-100 CRT Composite Color Display Monitor, which is compatible with Apple II computers. The 13-inch monitor weighs 30.8 pounds, produces a minimum of eight colors, and can display up to 1000 characters. Controls include a phone pin jack; sound, contrast, and power switches; vertical hold, color, tint, brightness, and more.

Designed for use with Sakata's SC-200 RGB High Resolution Color Monitor, the XB-7 board

Sakata's SC-100 CRT Composite Color Display Monitor

for the Apple IIe computer generates 80-column video for both RGB and NTSC monitors. You select RGB text color using switches, and the RGB output faithfully reproduces all the IIe's video modes. It also gives you several new video modes.

The card comes with a 24-page manual, an Apple IIe Rev. B molex connector, and an RGB cable kit. *(List Price: SC-100, $329; XB-7, $249)*

Requires: Apple II, II Plus, IIe, or IIc (SC-100); Apple IIe (SB-7)

Sakata U.S.A. Corporation
651 Bonnie Lane
Elk Grove Village, IL 60007
(800) 323-6647
in IL (312) 593-3211

CIRCLE READER SERVICE NO. **860**

II SERIES

▸ REMOVABLE 5-MEGABYTE HARD DISK

Digital Electronic Systems' 5-megabyte Removable Hard Disk (HDAP) is fully software-compatible with Apple DOS 3.3, CP/M, and Pascal. Its built-in features include a removable 5-megabyte Disk Pac, the ability to mix different-size drives in the same system, and software that is capable of supporting up to 900 megabytes.

The package includes a controller, cables, a drive, a box, a power supply, setup floppy disks, a manual and a Hard Disk Pac. *(List Price: $1295)*

Requires: Apple II or IIe

Digital Electronic Systems
107 Euclid Avenue
Mountain Brook, AL 35213
(205) 871-0987

CIRCLE READER SERVICE NO. **861**

II SERIES

▸ cPRINT INTERFACE

The cPrint Interface enables you to connect the Epson RX or FX series of printers to the Apple IIc's serial interface.

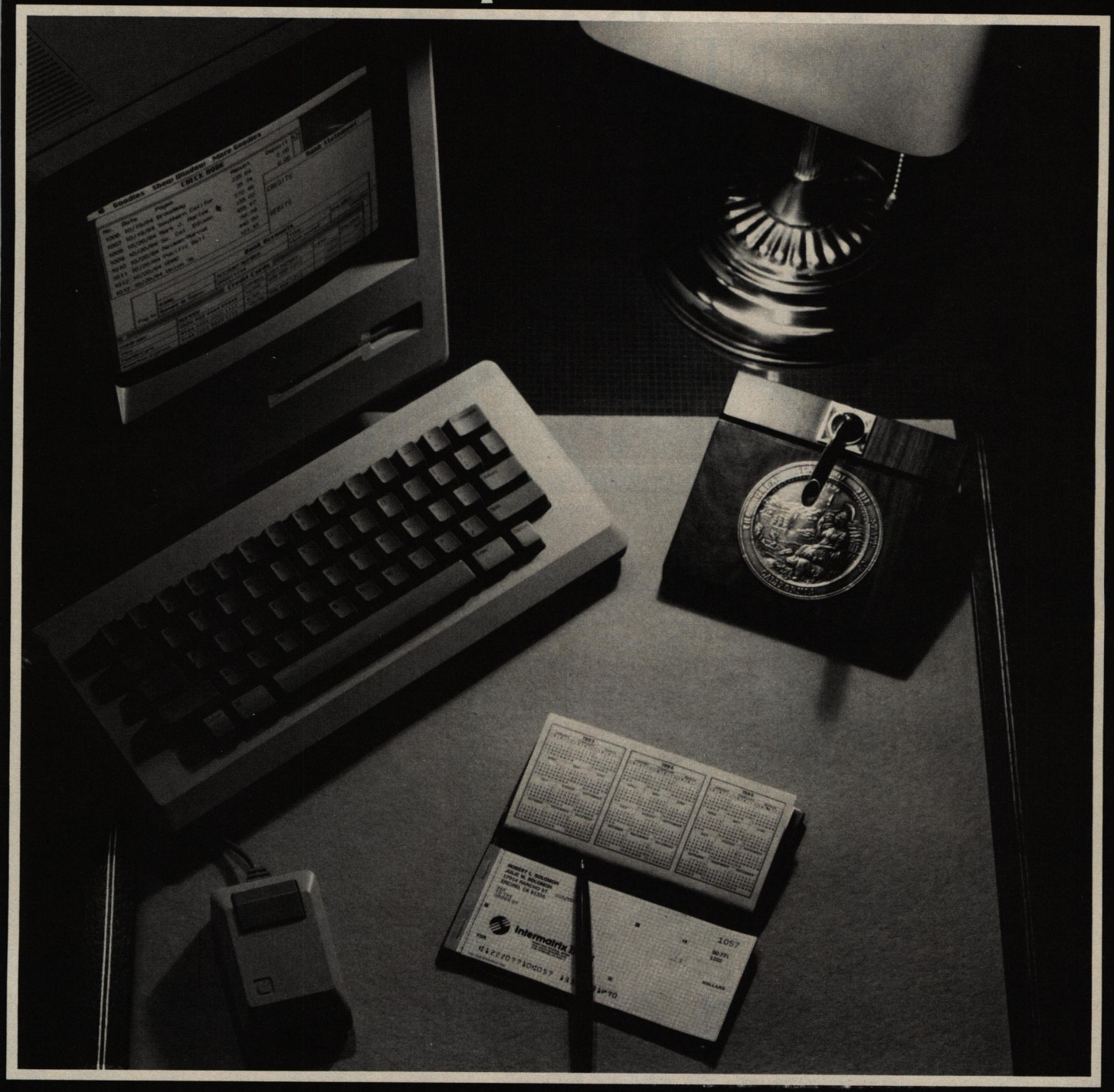
The cPrint Interface includes a printer serial-interface card and a shielded cable that plugs directly into the IIc's printer port. *(List Price: $59.95)*

Requires: Apple IIc

Dresselhaus Computer Products
837 East Alosta Avenue
Glendora, CA 91740
(818) 914-5831

CIRCLE READER SERVICE NO. **862**

ChequeBook™



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Word Challenge. A mind boggling computer game in which you compete head to head against LEX™ and his 90,000 word lexicon. It's a race against the clock. You and LEX each form words as quickly as you can by connecting randomly generated letters inside a playing grid.

You win points for every word you found that LEX didn't. Word Challenge keeps the score.

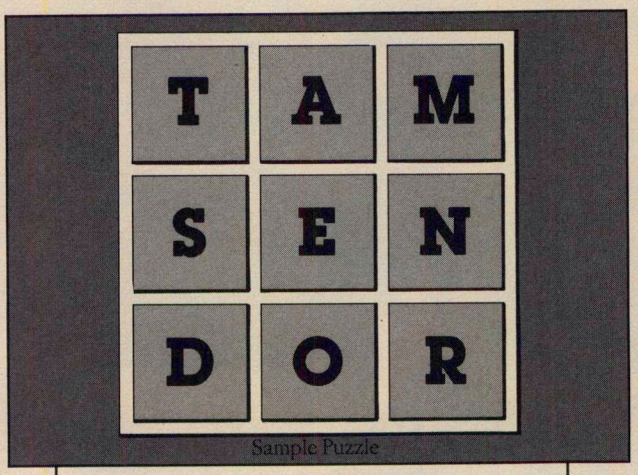
HOW MANY WORDS CAN YOU FIND IN THIS WORD CHALLENGE GRID?

Words are legal if their letters touch in sequence on any side or corner. "TEAM" is legal, while "TEAMS" is not, since the "S" does not touch the "M." LEX, playing at a "friendly" level, found 23 words of three letters or more. At his most competitive, LEX found 110 words (see list to the right). Can you do better?

Play Word Challenge alone or with a group. See if your family or friends together are wordy enough to bring LEX to his knees. You'll have a lot of fun and learn a new word or two in the process.

Word Challenge operates on

CIRCLE 389 ON READER SERVICE CARD



Sample Puzzle

Can you beat LEX?

Puzzle Answers

Here's what LEX found. Can you do better?

aeon	manor	nods	sat
amen	maser	nor	sate
anode	mason	nos	sated
anodes	masoned	nose	sea
aster	mast	nosed	seam
astern	master	ode	seat
ate	mat	odes	senor
dean	mate	one	set
den	mated	ones	sod
doe	mates	ore	son
doer	mats	ores	sore
does	mean	ornate	stamen
don	meat	ream	steam
donate	meats	reason	stem
donates	men	red	stern
done	mesa	redo	tam
dos	meson	reds	tame
dose	met	rest	tamed
east	name	rod	tamer
eat	named	rode	tames
eats	names	rods	tan
eon	neat	roe	tea
eta	nest	roes	team
etas	net	rose	teas
man	nets	same	ten
mane	nod	sane	tenor
maned	node	saner	tern
manes	nodes		

Apple™ II+, IIe, IIc, Macintosh,™ Commodore 64,™ IBM PC,™ PCjr.,™ and popular compatibles.

Word Challenge is part of Hayden's HeadStart Program which allows schools to accumulate points toward free computers, peripherals, and software. Buy Word Challenge, and your school will receive 20 HeadStart Points.

Word Challenge. Only $39.95. Contact your local computer software dealer or Hayden Software, 600 Suffolk Street, Lowell, MA 01854, phone toll-free 800-343-1218.

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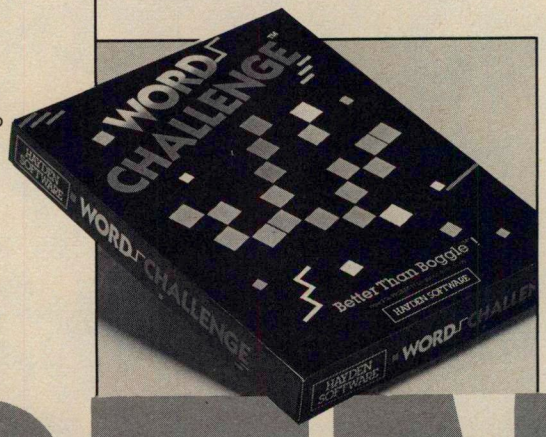

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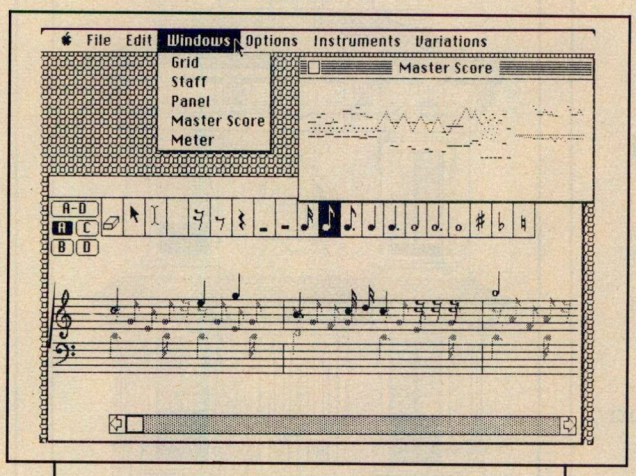
If you already know musical notation, you can compose directly on a staff. Use the mouse to place your notes, to select the meter and key signatures, and to listen to your music instantly.

Either way, grid or staff, if you make a mistake or want to change something, simply erase and edit.

You can play back your whole composition or any part of it whenever you want.



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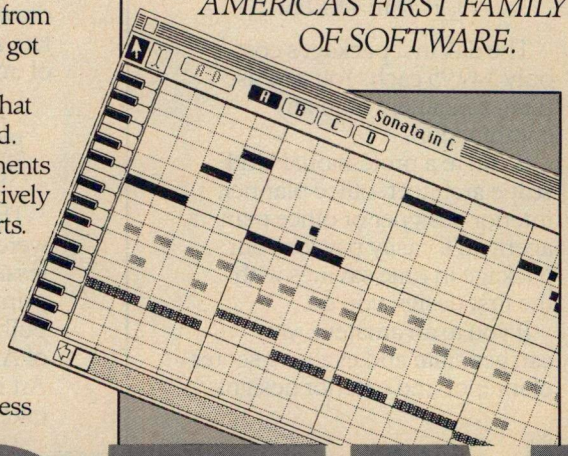

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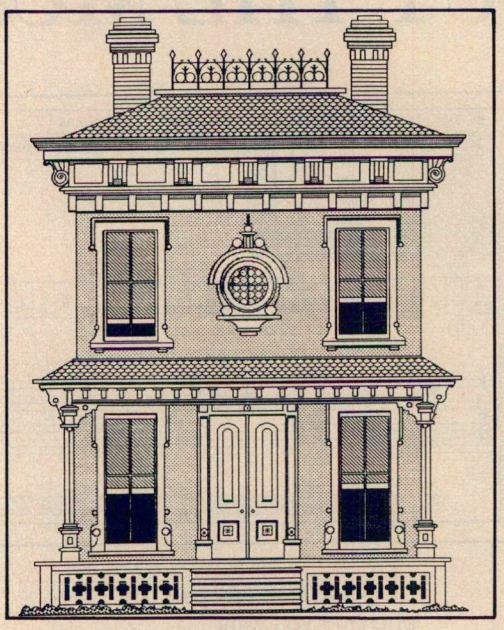

NAIL DOWN YOUR DREAM HOUSE. ONLY $49.95.

Hayden's three new daVinci graphics packages—Buildings, Landscapes and Interiors—let you use your Macintosh to design a house or an office, landscape it, and arrange the interior.

DaVinci works with your MacPaint™ program. Each daVinci package gives you hundreds of design selections. Use them as is, or alter them to suit your own ideas. Deletions or additions are no harder than a sweep and click of your mouse.

SEE THE FOREST OR THE TREES.

The daVinci packages cost only $49.95 each. You can use them separately or in any combination.

If you're a professional landscape architect, office planner, interior designer or office manager you'll easily pay for your package in time savings with the first design you do.

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REARRANGE YOUR FURNITURE WITHOUT HURTING YOUR BACK.

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To put daVinci to work, see your local software dealer, or contact Hayden Software, 600 Suffolk Street, Lowell, MA 01854, phone toll-free 800-343-1218.

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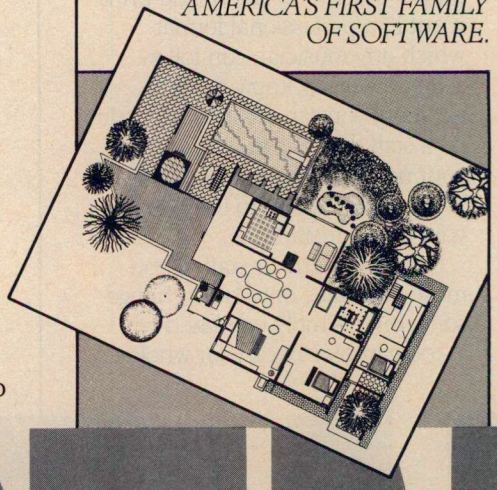

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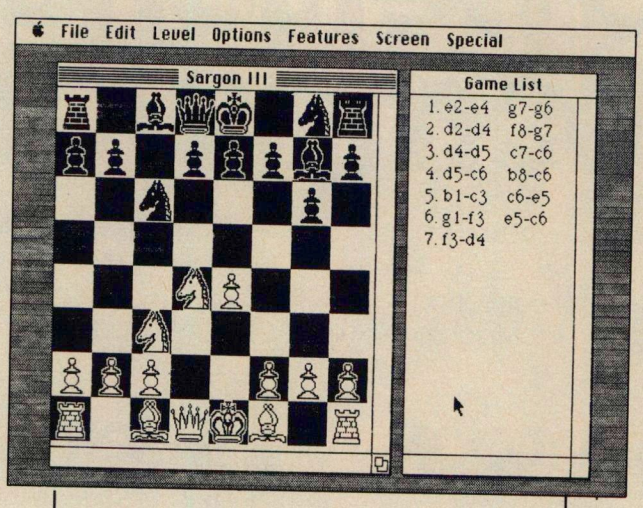
The intuitive operating style of the Macintosh perfectly complements the exquisite playability of Sargon III.

No need to type in your moves manually. Use the mouse to move your pieces. Pull-down menus make it easy to select the game's different options and features. With just a sweep and click of the mouse you can choose one of Sargon III's nine playing levels, change board size, save a game in progress to disk, or print out your game in high-quality Macintosh graphics.



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In a tournament sanctioned by the U.S. Chess Federation, Sargon III beat a master rated 2209. That makes Sargon III the only microcomputer program ever to defeat a player at that level.

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In addition to the Macintosh, Sargon III also operates on Apple™ II+, IIe, IIc, Commodore 64,™ IBM PC,™ PCjr.™ and popular compatibles.

Sargon III. Only $49.95. See your local software dealer, or contact Hayden Software, 600 Suffolk Street, Lowell, MA 01854, phone toll-free 800-343-1218.

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Learn the ins and outs of investing in commercial, residential or undeveloped property. But don't count your mortgages too soon. Just when you think it's safe to call yourself a millionaire, any number of world or local events can come into play and send you to the poorhouse. That's BARON – exciting, realistic, and practical.

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BLUE CHIP SOFTWARE™

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▸ DISCACHE SYSTEM AND ACCESSORIES

The DisCache System is a high-speed, high-performance, Winchester-disk system for Apple II computers. The 10-, 20-, or 40-megabyte subsystem includes a 5¼-inch hard disk, 256 kilobytes of fast RAM cache memory, a built-in specialized microcomputer, and an incremental backup system, Diskback. The built-in RAM cache offers a maximum access time, for a sector from RAM, of 100 microseconds, which results in an average disk-access time of 8 milliseconds. The system also provides a 1-megabyte print spool that has a choice of a built-in Centronics or RS-232C interface.

The high-performance DisCache Winchester-disk subsystem uses fast RAM cache memory.

Cache-Net, a multiuser enhancement to the DisCache system, is also included.

Cache-Net allows up to 21 computers to share access to a 10- or 20-megabyte DisCache. The system allows you to use mixed computers and mixed operating systems. *(List Price: 10-megabyte, $3350; 20-megabyte, $4250)*

Requires: Apple II, II Plus, IIe, III, or Macintosh

Eicon Research, Inc.
520 Fifth Avenue
Penthouse Suite
New York, NY 10036
(212) 719-5353

CIRCLE READER SERVICE NO. **863**

▸ RGB INTERFACES FOR APPLE II COMPUTERS

Video-7 has released three RGB interfaces that allow you to use your Apple-compatible RGB monitor as a monochrome monitor for 80-column text or an RGB color monitor for color graphs and charts—the 64K RGB Interface, the Slot-7 RGB Interface, and the IIc RGB Interface. With each of these interfaces, you can select amber, white, green, or blue text color.

All of the interfaces work with Apple-compatible RGB monitors, or with IBM-compatible monitors in conjunction with the Mappler Interface. The Mappler Interface converts Apple-compatible RGB signals for use with IBM-compatible RGB monitors.

The 64K RGB Interface replaces the Extended 80-column card in the Apple IIe; the Slot-7 Interface works in expansion slot 7 in any II, II Plus, or IIe; and the IIc Interface works in expansion slot 7 in any II, II

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$59	**$79**	**$199**	**$78**	**$379**	**$259**

MONITORS

Amdek 300A	$149
Amdek 300G	129
Amdek 310A/310G	169
Amdek Color 1+	299
Amdek Color 2+	525
Gorilla Amber/Green	79
Princeton Graphics HX-12	499
Princeton Graphics SR-12	699
Princeton Graphics MAX-12	199

MODEMS

Hayes Smartmodem 1200b	$379
Hayes Smartmodem 1200	489
Hayes Smartmodem IIe	239
Hayes Smartmodem 300	209

PRINTERS

Epson FX-80	$499
Epson FX-100	699
Epson RX-80	299
Epson RX-80 F/T	399
Okidata 82	299
Okidata 83	589
Okidata 92	429
Okidata 93	699
Gemini 10x	259
Gemini 15x	399
Juki 6100	449
Brother HR-15	479
Brother HR-25	729
C. Itoh F10-40	900
C. Itoh F10-55	1100

PRODUCTS FOR APPLE

Orange Micro Grappler+	$119
Orange Micro Grappler+ 16K	179
Microtek 16K Card	59
Microtek Magnum 80 Col. Card	179
Microtek Magnum 80e	89
Videx 80 Column Card	229
Videx Ultraterm	279
Microsoft Z-80 Softcard	249
Microsoft Z-80 Softcard IIe	279
Microsoft 16K card	79
Kraft Joystick	37
Koala Pad	83
Rana Elite One Disk Drive	239

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Store Hours: Monday thru Friday 8 a.m. to 5 p.m. P. C. Time.
Mail Order: 712 Wilshire Blvd., Ste. 1032, Santa Monica, CA 90401 We Accept VISA, American Express, Bank Wire Transfers.

Shipping Charges are added to ALL orders. Advertised prices reflect 3% discount for cash, add 3% for use of credit cards. Price and availability subject to change. California residents add 6.5% sales tax.

Order Desk:
1-213-395-7784

CIRCLE 298 ON READER SERVICE CARD

Plus, or IIe; and the IIc Interface converts the IIc's raw RGB output to a signal compatible with an RGB monitor. *(List Price: 64K RGB Interface, $299.95; Slot-7 RGB Interface, $149.95; IIc RGB Interface, $199.95; Mappler Interface, $49.95)*

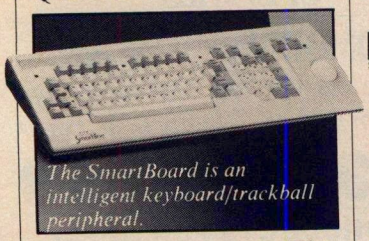
Video-7, Inc.
12340 Saratoga Sunnyvale Road, Suite 1
Saratoga, CA 95070
(408) 725-1433

CIRCLE READER SERVICE NO. **864**

II SERIES

▸ THE SMARTBOARD

Wico has introduced an intelligent keyboard/trackball peripheral, the SmartBoard. The keyboard allocates 256 bytes to ten horizontally positioned function keys, and you can program any function key to contain up to 126 characters of information. The keyboard also features both QWERTY and Dvorak



The SmartBoard is an intelligent keyboard/trackball peripheral.

Selectric-style layouts. The SmartBoard's trackball is capable of all standard trackball commands and mouse emulation. You can program it with up to eight characters in any of four primary directions. Apple computer owners must purchase a special adapter to use the unit. *(List Price: SmartBoard, $399.95; adapter, $50)*

Requires: Apple II, II Plus, or IIe

WICO Corporation
6400 West Gross Point Road
Niles, IL 60648
(312) 647-7500

CIRCLE READER SERVICE NO. **865**

II SERIES

▸ PORTABLE KEYBOARDS

The Computer Practice Keyboard Company has introduced printer keyboards that enable users to learn and practice keyboard finger positions when they are away from their computers. Each keyboard is printed on a laminated 8½ × 11-inch board, and the back contains a brief dictionary of computer words. The board also provides explanations of each special key function. The keyboards are available for most popular computers, including Apples. *(List Price: $3.95)*

Computer Practice Keyboard Company
616 9th Street
Union City, NJ 07087
(201) 863-0999

CIRCLE READER SERVICE NO. **866**

II SERIES

▸ 24/16 DIGITAL I/O BOARD

Control Ware's 24/16 Digital I/O Board features 16 inputs, 16 buffered outputs, and a 1-byte input. Each of the 16 inputs has its own memory address, and each of the 24 input lines has its own pull-up resistor so that TTL circuits or switches can act as inputs. The I/O Board's uses include robotics and industrial and home control. *(List Price: $89)*

Requires: Apple II, II Plus, or IIe

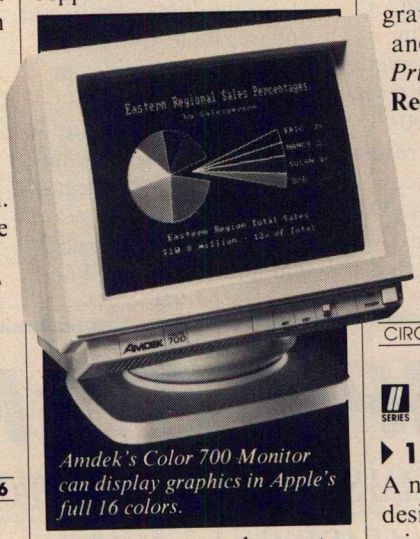
Control Ware
P.O. Box 1467
Oak Brook, IL 60521
(312) 530-4110

CIRCLE READER SERVICE NO. **867**

II SERIES

▸ AMDEK COLOR 700 AND 710 MONITORS

Amdek has introduced two high-resolution video monitors that interface with RGB-TTL-output computers. The Color 700 Series can provide up to 96 columns and 25 lines of text display, and a built-in switchable color matrix allows it to display the full 16 Apple colors. The monitor



Amdek's Color 700 Monitor can display graphics in Apple's full 16 colors.

has front-mounted operator controls, including a power switch with LED display, brightness, contrast, and text switch to change text color from white to green.

Another version of the Color 700, the Amdek Color 710, has an etched-glass CRT to reduce glare and features a long-persistence phosphor to provide greater vertical resolution. An optional tilt/swivel base stand is also available. *(List Price: Color 700, $749; Color 710, $799)*

Requires: Apple II, II Plus, IIe, or IIc

Amdek Corporation
2201 Lively Blvd.
Elk Grove Village, IL 60007
(312) 595-6890

CIRCLE READER SERVICE NO. **868**

II SERIES III MAC

▸ SCOOTER MULTI-BUFFER

The Scooter Multi-Buffer allows one printer to accept data from up to three microcomputers. The buffer requires no manual switching, features 64K memory, and is compatible with most microcomputers and any parallel-interface printer. Its features also include a memory-indicator LED bar graph and Pause, Copy, and Reset switches. *(List Price: $389)*

Requires: Apple II, II Plus, IIe, IIc, III, or Macintosh; parallel printer

Ohm/Electronics
746 Vermont
Palatine, IL 60067
(312) 359-6040

CIRCLE READER SERVICE NO. **869**

II SERIES III

▸ 12-BIT A/D CARD

A new A/D converter card designed for industrial and scientific applications, the 12-Bit A/D Card enables an Apple II computer to acquire and convert analog signals. The card provides 16 single-ended or eight differential inputs, which are software-selectable. On-board ROM routines allow you to address the A/D converter using BASIC statements. The card's full 12-bit conversion time is 25 microseconds, and a short-cycled 8-bit conversion takes 15 microseconds. *(List Price: $599)*

Requires: Apple II, II Plus, IIe, or III

Columbus Instruments International Corp.
950 North Hague Avenue
Columbus, OH 43204
(614) 488-6176

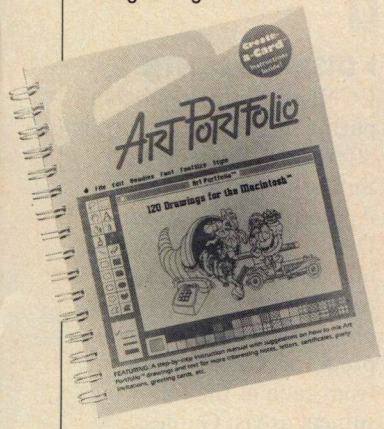
CIRCLE READER SERVICE NO. **870**

Creative Inspiration

Sive inspiring new programs for your Macintosh™ from Axlon. You'll find these programs at better Apple dealers right now. (Or any day now.)

1ne
Art Portfolio™
$59.95

A diskfull of art spots and a book full of ideas on how to use them. If you like to MacPaint;™ if you know how to take advantage of good ideas to unleash your creativity, Axlon's Art Portfolio is for you. It includes really beautiful art spots, much better than anything else available. And the images are exactly the right size for you to use in your letters and cards. Create-a-Card instructions are included to give you ideas about making your own greeting cards.



2wo
The Card Shoppe™
$59.95

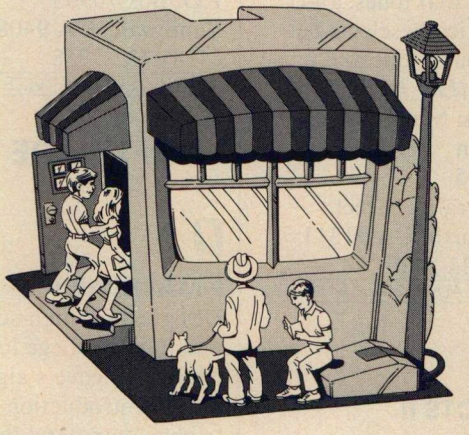
Here's everything you and your MacPaint program need to get into the card-making business.

▶ Special drawings, ranging from the obvious to the obscure.

▶ A complete, exhuberant calendar of holidays and greeting card occasions, if you need one to create a card.

▶ A see-through formatting overlay for your Mac screen that lets you position your art and words before you print, so you know it will fit properly on your card when folded.

▶ Samples of paper and envelopes for your ImageWriter. Best of all, The Card Shoppe gives you a ton of creative ideas for your own special cards for your own special purposes.

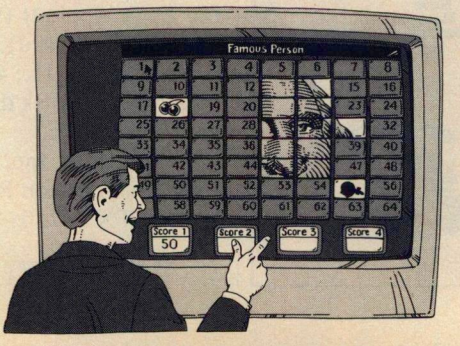


3hree
MacMatch™
$49.95

This is one of the first of a new breed: Native Macintosh games. Our software gamemakers have taken their inspiration from the tv game show, Concentration,™ and have built it on the Mac's quickness and graphics power. When you match two squares, you get clues about the hidden puzzle. It comes with puzzles, but the real beauty is that you can make up your own, as complex or simple as you like. You'll never get bored. And think what party puzzles might look like...

4our
MouseTracks™
$49.95

We put Mac's considerable graphics skills through the loops to develop an eye-popper for Mac's first mouse game. You will zoom an animated mouse through a maze-like environment avoiding a bad kitty cat intent on supper. There are plenty of perils and rewards for the skillful. MouseTracks shows everyone how much fun Macintosh can be.



5ive
Typing Avalanche™
$59.95

Since man does not live on art alone, but by lots of words that flow from the mouth of Mac, we've commissioned the first typing strategy program for the Mac. It's aimed at the poor duck who somehow got through school without learning touch typing. (The rest of us, in other words.) It's fast paced. It's fun. And it works. Play it a while, and you'll suddenly realize you are a touch typist. Someday the schools will catch up.

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Axlon Inc.
1287 Lawrence Station Rd.
Sunnyvale, CA 94089

CIRCLE 342 ON READER SERVICE CARD

HARDWARE/ SOFTWARE

II SERIES

EPIQ MICROCOMPUTER DEVELOPMENT

The EPIQ System, which resides on a single 5¼-inch disk, comprises ten menu-driven resources: a file-structured operating system, a full-screen file editor, a two-pass full-featured assembler, a reverse assembler, modem facilities, an EPROM programming facility, file-listing utilities, complete copy and disk-management resources, an emulator up/down loader and controller, and a powerful command-file processor. The system comes as a complete turn-key hardware/software development system or as subsystems. *(List Price: $795)*

Requires: Apple II, II Plus, or IIe; 48K RAM; two disk drives

Development Associates
1520 South Lyon Street
Santa Ana, CA 92705
(714) 835-9512

CIRCLE READER SERVICE NO. **871**

MAC

CAT COMMUNICATION SYSTEM

This communication system for the Macintosh includes a Smart-Cat Plus modem, Mite communication software, user manual, AC adapter, and cable. The 300/1200-bps modem uses the Hayes communications protocol, detects busy signals and dial tones, and automatically selects between touch-tone and pulse dialing. *(List Price: $499)*

Requires: Macintosh

Novation
Box 2875
20409 Prairie Street
Chatsworth, CA 91311
(800) 423-5419

CIRCLE READER SERVICE NO. **872**

II SERIES III

EFFECTS II

A new operating system for the DX-1 Sound Sampling System, Effects II allows musical reproduction of sound over a more than five-octave musical scale, in both forward and reverse directions. The system includes new external triggering and synching abilities, as well as Tune, Sequencing, and Preset Patterns menus.

Users can also select a software interface to two popular keyboards, the Syntauri keyboard and Passport Designs' Soundchaser. *(List Price: $349)*

Requires: Apple II, IIe, or III; 48K RAM; one disk drive

Decillionix
P.O. Box 70985
Sunnyvale, CA 94086
(408) 732-7758

CIRCLE READER SERVICE NO. **873**

Cat Communication System, from Novation

SOFTWARE

II SERIES

MATHLAB I

Designed for high-school and junior-college levels, Mathlab I covers algebra I and II, introduction to trigonometry, and the beginnings of calculus. Instead of drill and practice, the program offers seven interactive screens that students and teachers can use to discover and test principles of algebra and trigonometry. The screens consist of a dynamic unit-circle diagram, two tabulation screens, two graphics screens, an animated illustration of arc and angle relationships, and a blackboard for working out complicated mathematical expressions. *(List Price: $79.95)*

Requires: Apple II (with Language Card), II Plus, IIe, or IIc; 48K RAM; one disk drive

Prime Software Innovations, Inc.
10502 Foundation Road
Austin, TX 78750
(512) 258-3819

CIRCLE READER SERVICE NO. **874**

II SERIES

TEXT-TO-SPEECH:65

A real-time, text-to-speech translation program for the SSi-263 phoneme synthesizer, Text-to-Speech:65 translates unrestricted English text directly into speech. The program can use text generated by a program or typed from the computer keyboard. Text-to-Speech:65 is compatible with the Sonix:65 Speech Operating System and Phonetic Speech Editor and can also work with the Syn-Phonix 100 speech synthesizer. *(List Price: $29.95)*

Requires: Apple II, II Plus, or IIe

Artic Technologies
2234 Star Court
Auburn Heights, MI 48057
(313) 852-8344

CIRCLE READER SERVICE NO. **875**

II SERIES

DISK-A-MONTH

ECN, an educational-computing software company, is offering a Disk-a-Month Subscription Service for Apple II computer users. Disk-a-Month is published nine times per year, and each month you receive nine programs on a disk. The programs comprise one from each of the following subject areas: Games, Health/Nutrition, Management, Programming, Utility, Graphics, Language Arts, Math, and Science. *(Subscription Cost: $9 per month, $75 per year)*

Requires: Apple II, II Plus, or IIe

Educational Computing Network
12680 Hollyglen Circle
P.O. Box 8236
Riverside, CA 92515
(714) 687-3333

CIRCLE READER SERVICE NO. **876**

The most BASIC.

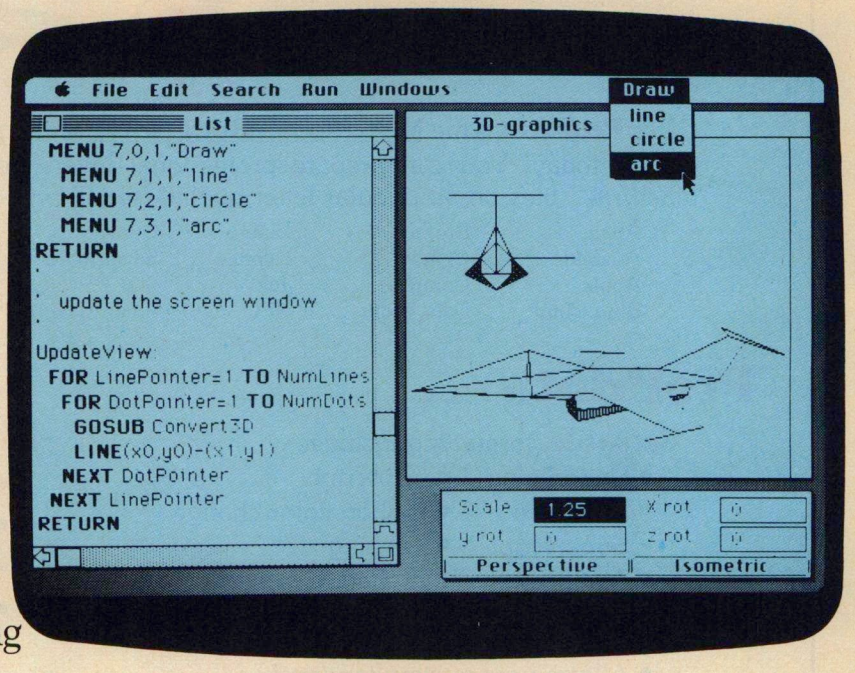
Microsoft® BASIC is the language spoken by nine out of ten microcomputers worldwide. It's the language with the most programs written for it.

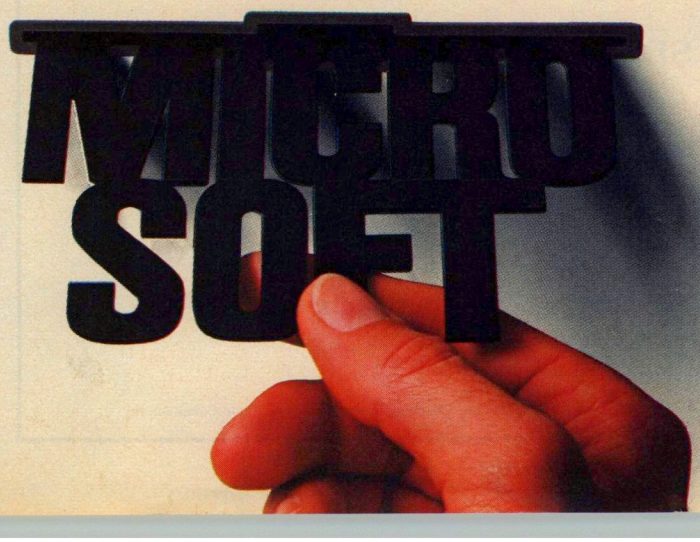
So if you want to access the power of your Macintosh,™ only one language makes the most sense. Mac's first language, Microsoft BASIC.

Not only is it the industry standard, it's the most advanced BASIC for Macintosh. It lets you add mouse commands. Graphics. Windows. Change type fonts and styles. Customize menus. Incorporate music and sound effects. Write your own dialog boxes. Basically, it lets you take advantage of everything that makes Mac 'Mac.'

It makes editing programs as easy as cutting and pasting and pointing and clicking. Debugging is easier than ever with the advanced trace command.

It's no wonder Microsoft is the most logical choice for the Macintosh.





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Creighton Development, Inc. 4931 Birch Street, Newport Beach, CA 92660
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Tecmar

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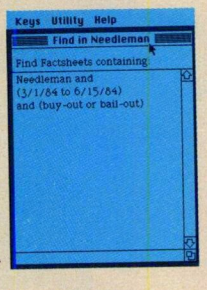
When you need to find all the clients you have who hate olives or live in Denver; when you want to collect your notes on pasta merchandising; when you need the name and number of that guy who's looking for leveraged buyouts, it's yours in a few seconds, at your index fingertip.



You just key in your notes on the Needleman Plan (or Needleman vs. Nardoff or the Needleman Noodles campaign) in any length you want, and click the mouse on a few key words—"fallout," "bail out," "roll-out," "leveraged buyout," whatever.

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From Forethought, Inc.

MACWARE™

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How to find a Needleman in a haystack.

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II SERIES

▸ SPREADSHEET OPTIMIZER

vc/KIT is designed to ease the use of VisiCalc and other DOS 3.3 file-compatible spreadsheets. The program allows VisiCalc to load data files from many word processors and databases, and it then sorts the spreadsheet and displays all formulas in their correct grid locations. Help screens and a library of command files are available while the spreadsheet is active; you can reach other features via the program's menu system. *(List Price: $45)*

Requires: Apple II or IIe, any DOS 3.3 file-compatible spreadsheet program

Proform Development Corporation
P.O. Box 1602
Edmonton, Alberta
Canada, T5J 2N9
(403) 429-1382

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MAC

▸ SOFT START

A three-volume series of Multiplan and MacPaint documents for the Macintosh, Soft Start includes Personal Finance, Business Analysis, and Business Forms.

Personal Finance contains worksheets for budgeting, stock and bond portfolios, basic property management, cash flow, net worth, checkbook and credit-card balancing, and mortgage analysis.

Business Analysis contains worksheets for cash flow, income-statement and balance-sheet analysis, receivables and payables, payroll schedules, and break-even analysis.

Business Forms contains predrawn forms for invoices, statements, purchase orders, payable vouchers, payroll registers, inventory control, telephone messages, and planning calendars. *(List Price: Personal Finance, $49.95; Business Analysis, $49.95; Business Forms, $49.95)*

Requires: Macintosh

Owl Software
79 Milk Street, Suite 1108
Boston, MA 02109
(800) 343-0664

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II SERIES

▸ ENVRONMENTAL GRAPHICS

Intended for those who want to design graphs easily, Environmental Graphics is an environmental-, scientific-, and business-graphics software package. It lets you produce maps, scatter diagrams, bar and pie charts, graphs that have linear or logarithmic axes, and graphs from mathematical equations. You can also edit text and graphs. *(List Price: $69.95)*

Requires: Apple II, II Plus, or IIe; DOS 3.3

Gemini Video
P.O. Box 2018
Vernon, CT 06066
(203) 875-0052

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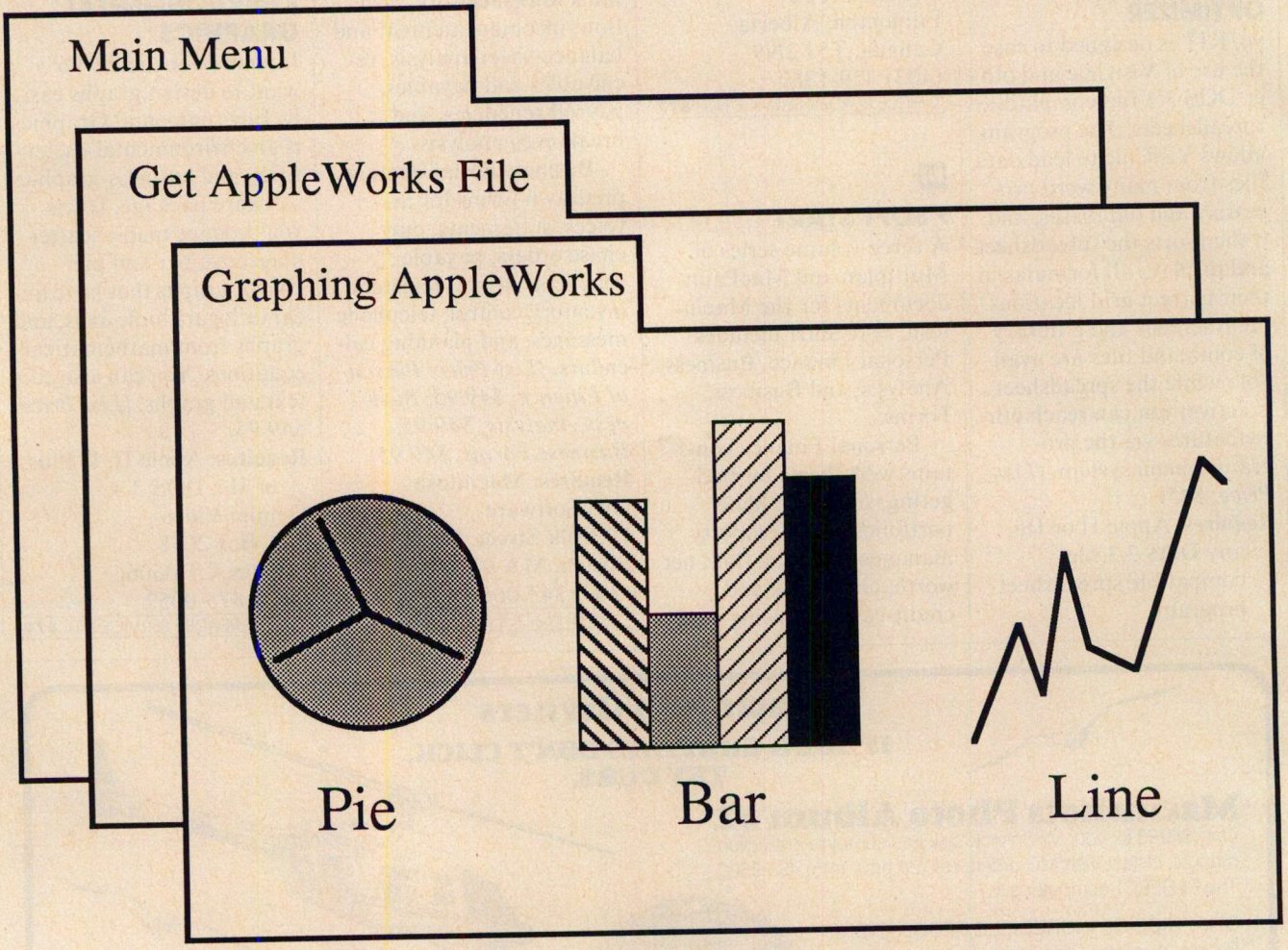
GraphWorks™



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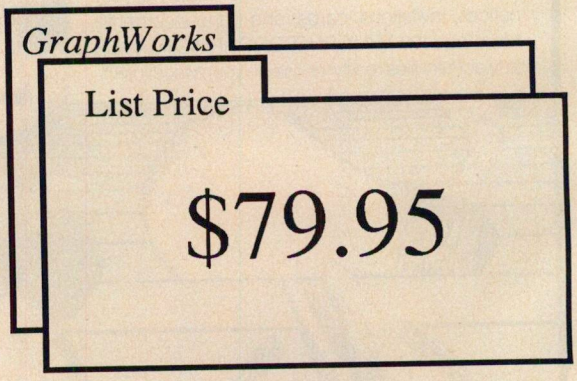

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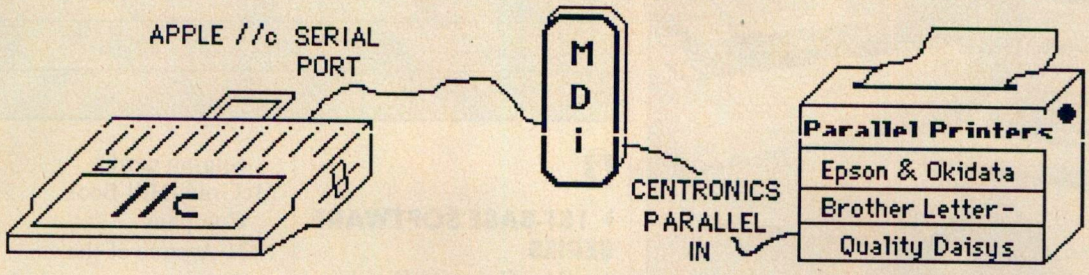

//c Mates with Parallel Printers...

who's cast of characters include the dot-matrixed Epsons, Okidatas, Geminis, and the daisy wheeled letter quality Brother and TTXs to name a few. This low cost serial-to parallel adapter comes complete with everthing you need to connect your Apple's serial printer port to a standard parallel printer. Installs in seconds! Please specify the printer you'll be using.

SERIAL BOX for the Apple //c	$89.95

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allows you to select between two RS-232 serial devices such as a modem and a printer or a plotter and any printer or any combinations of RS-232 serial devices; all at a push of a button.

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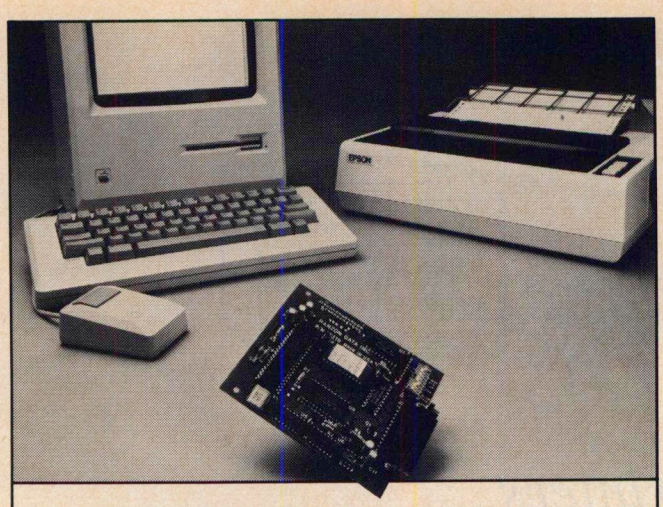

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HanZon Data just made using your Epson FX and RX printers with a Macintosh, Lisa, and Apple IIc incredibly easy. One card is all you need. It's the HanZon Model 12319 Universal Interface Card.

In the "Epson" (RS-232) mode, it functions as a standard serial interface with XON/XOFF protocol. In the "Apple" mode, incoming data is checked for the control codes used with Apple Imagewriter brand printers and converts them to the equivalent Epson codes. This unique dual mode feature allows the Epson printers, unlike Imagewriters, to work with the software written for the Apple IIc.

The HanZon Universal Card is available through Apple and Epson dealers nationwide for only $129.50 (suggested retail). For more information, contact HanZon Data Inc., 18732 142nd Avenue N.E., Woodinville, WA 98072. (206) 487-1717.

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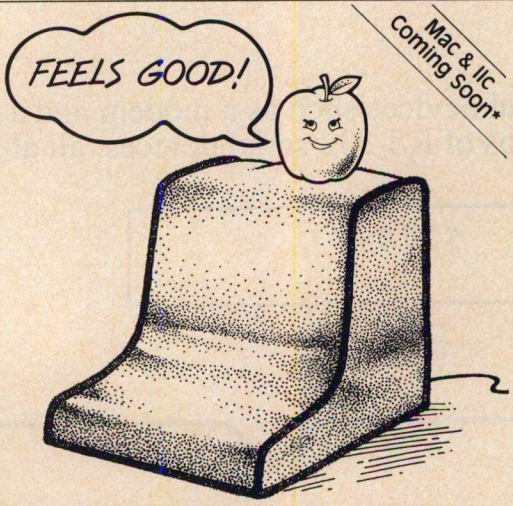

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▸ 1ST BASE SOFTWARE SERIES

1st Base Software Series is a series of 12 different ready-to-run database programs for both business and home applications. The six packages in the Home Series are: Home Address Manager, Home Inventory Manager, Personal Income Tax Records Manager, Portfolio Data Manager, Record Collection Manager, and Stamp and Coin Collection Manager. The Business Series comprises the Business Address Manager, Business Inventory Manager, Client Billing Manager, Customer Records Manager, School Records Manager, and Word Processing Manager.

The packages offer the power to enter, edit, and display data; to query, sort, and select data; and to format, display, and print data. Many of the programs contain a mail-merge feature. *(List Price: Home Series, $29.95 each; Business Series, $49.95 each)*

Requires: Apple II Plus or IIe, CP/M Softcard, 80-column card

McGraw-Hill Book Company
1221 Avenue of the Americas
New York, NY 10020
(212) 512-3493

CIRCLE READER SERVICE NO. **880**

II SERIES

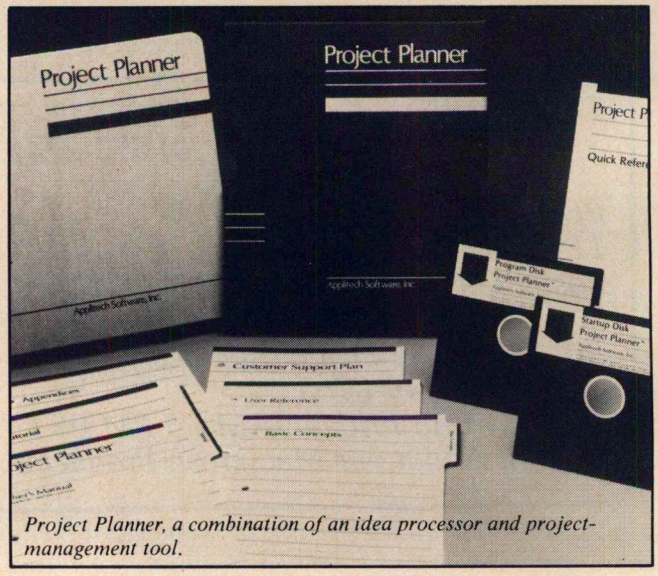
▸ PROJECT PLANNER

A combination of an idea processor and a project-management tool, Project Planner offers all the capabilities of the critical-path method. The program enables users to plan, organize, schedule, control, and monitor projects; focus on critical activities; and use "what if" analysis. It also helps users organize their ideas on scheduling and tracking projects by generating flowcharts and schedules automatically, filtering out any inconsistent information. *(List Price: $150)*

Requires: Apple II Plus, IIe, or IIc; 64K RAM; two disk drives

Applitech Software, Inc.
381 Harvard Street
Cambridge, MA 02138
(617) 497-8268

CIRCLE READER SERVICE NO. **881**



Project Planner, a combination of an idea processor and project-management tool.

MAC

▸ EPSTART

Epstart is a software utility that modifies standard Macintosh printer drivers so that Macintosh owners

The Epstart utility enables Macintosh owners to use the Epson FX and JX printers.

can use the Epson FX and JX series of printers to produce text and graphics. The utility is compatible with most application software that uses Macintosh printing standards.

To use the product, you must install it on each Macintosh application disk; once installed, Epstart is transparent to the user. *(List Price: $39.95)*

Requires: Macintosh; standard printer cable; Epson JX-80, FX-80, or FX-100 printer with an 8143, 8145, or 8148, or equivalent serial interface

SoftStyle, Inc.
7192 Kalanianaole Highway, Suite 205
Honolulu, HI 96825
(808) 396-6368

CIRCLE READER SERVICE NO. **883**

II SERIES

▸ THE LOGO WIZ-KIT

The Logo Wiz-Kit is a comprehensive, easy-to-use tool for printing Logo files and graphics. It can also print KoalaPad pictures, solve Logo memory-management problems, and allow you to review Logo graphics and procedures even if Logo is not running. The kit includes two disks—one for teachers and one for students—and instructions for use. It is designed to work with most dot-matrix printers and printer-interface cards for Apple II computers and can also print graphics on the Imagewriter printer using the Apple Super Serial interface.

The Logo Wiz-Kit is produced by the Young Peoples' Logo Association (YPLA), which also operates The Midnight Turtle bulletin board; publishes a 40-page monthly newsletter, *Turtle News*; and operates a software exchange. Other Logo-related products from YPLA are The Logo Library—a comprehensive resource guide—and The Toddler's Turtle, which comprises single-keystroke Logo procedures that are integrated with typical kindergarten curriculum concepts. *(List Price: The Logo Wiz-Kit, $19.95)*

Requires: Apple II, II Plus, IIe, or IIc; 64K RAM; one disk drive; Imagewriter printer; Super Serial interface card or equivalent

Young Peoples' Logo Association
1208 Hillsdale Drive
Richardson, TX 75081
(214) 783-7548

CIRCLE READER SERVICE NO. **882**

▸ MOUSEPRINT

By modifying a backup copy of Apple's MousePaint program, Ahware's Mouseprint program allows MousePaint to print directly on printers other than Apple's Dot Matrix or Imagewriter printers.

Versions of Mouseprint are available for most of the popular printer/interface combinations, including the Epson, Okidata, C. Itoh, and Star Micronics lines of printers and the Epson, Grappler, Pkaso, Prometheus, Microbuffer, Graphicard, Apple, and Printerface interfaces. *(List Price: $22.95)*

Ahware
805 Luz Court
Danville, CA 94526

CIRCLE READER SERVICE NO. **884**

MAC

▸ OMNIS 2 —UPDATE

New price and new features characterize this upgraded version of Omnis 2 for both the original 128K Macintosh and the new 512K Macintosh. A business-oriented database-management program, Omnis 2 utilizes pull-down menus, the mouse, cut-and-paste facilities, the built-in calculator, and other Mac features. The program features free-format design of data-entry and report formats, 120 information fields on up to 12 screens, full numeric/date/logic functions, searches on up to 50 different criteria, sort down to nine levels, password protection, and other capabilities for managing business information. *(List Price: $275; upgrade of original program to enhanced version, $25)*

Requires: Macintosh

Organizational Software Corporation
2655 Campus Drive
Suite 150
San Mateo, CA 94403
(415) 571-0222

CIRCLE READER SERVICE NO. **885**

II SERIES III

▸ HABAMERGE AND HABATEMPLATES

Haba Systems has announced two new programs—HabaMerge and HabaTemplates—that are designed to work with AppleWorks and III E-Z Pieces. HabaMerge enables users of these two programs to merge their database and word-processing files to create form letters and mailing labels.

HabaTemplates consists of 54 ready-to-use database and spreadsheet templates for use with AppleWorks and III E-Z Pieces. The templates cover such applications as sales and expense analysis, profit and loss, rental-property analysis, and scheduling and time management. *(List Price: HabaMerge, $69.95; HabaTemplates, $29.95)*

Requires: Apple II, II Plus, IIe, III, or III Plus

Haba Systems
15154 Stagg Street
Van Nuys, CA 91405
(818) 901-8828

CIRCLE READER SERVICE NO. **886**

II SERIES

▸ THE HOME ACCOUNTANT EXPANDED

A completely rewritten version of The Home Accountant, The Home Accountant Expanded is designed to take advantage of the Apple IIc's features. Key new features include 80-column capability, ProDOS format, use of mouse, on-screen display of reports, and an appointment/memos calendar with bill-paying reminder and other helpful functions. *(List Price: $74.95)*

Requires: Apple IIe or IIc

Arrays, Inc./Continental Software
11223 South Hindry Avenue
Los Angeles, CA 90045
(213) 410-3977

CIRCLE READER SERVICE NO. **928**

MAC

▸ MACINTOSH OFFICE MANAGER

A fully integrated business-software package, MOM comprises a disk-oriented word processor, a fully functional database, a spreadsheet program, a graphics/charting program, and a mailmerge system. MOM is compatible with Multiplan and Lotus formats. *(List Price: $495)*
Requires: Macintosh
OmniSoft International
4 Mary Lane
Melville, NY 11747
(516) 367-8618
CIRCLE READER SERVICE NO. **896**

MAC

▸ MACBASE

A relational-database program for the Macintosh, MacBase enables you to place your data fields anywhere on the screen. The number of fields is limited only by memory, and the number of records is limited only by the file space. Because the printed copy looks like what appears on the screen, you can use preprinted business forms. MacBase works with one or two disk drives or a hard disk. *(List Price: $195)*
Requires: Macintosh
Eqtron Corporation
330 Bay Street, Suite 1115
Toronto, Ontario
Canada M5H 2S8
(416) 361-5002
CIRCLE READER SERVICE NO. **894**

II SERIES

▸ THOROUGHBRED HANDICAPPING SYSTEM I

Using the Thoroughbred Handicapping System, you can handicap an entire day's racing card and determine which races you should play. After you enter the relevant information of the day, the system automatically applies proven formulas to computer class, speed, distance, recency, track category, jockey, and trainer ratings on each horse. *(List Price: $129.95)*
Requires: Apple II, II Plus, IIe, or IIc; 48K RAM
PDS Sports
950 West 190th Street
Gateway 1
Torrance, CA 90502
(213) 516-6688
CIRCLE READER SERVICE NO. **922**

II SERIES

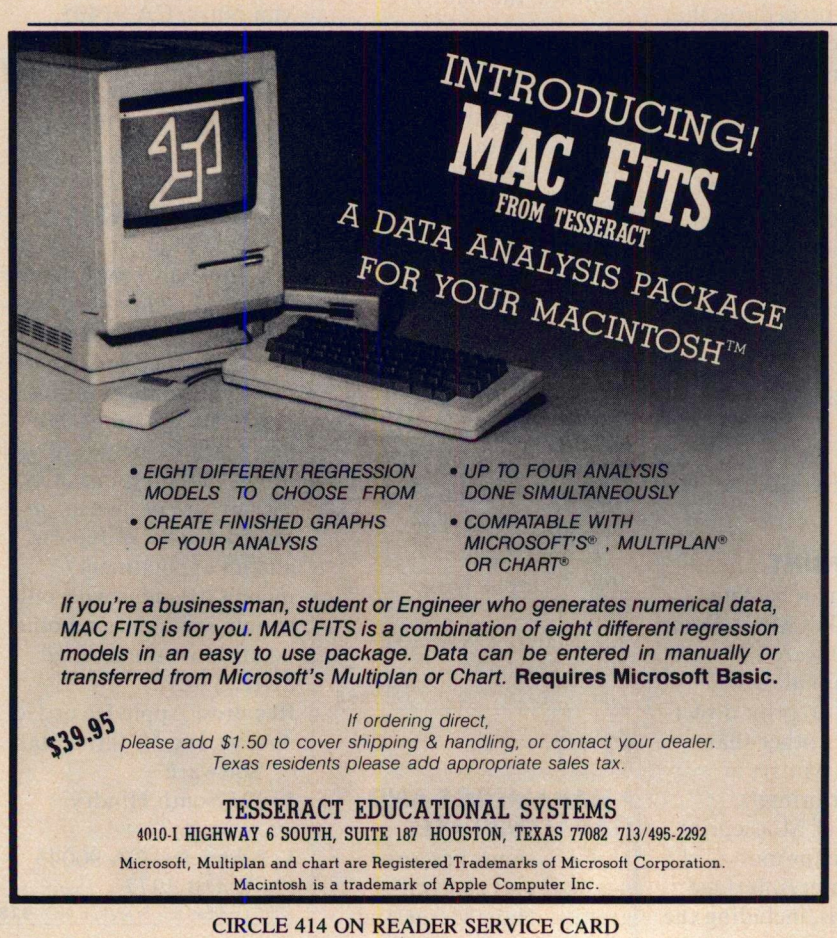
▸ SPORT SPREADSHEETS

Sports Stats—Basketball Statistics and Sports Stats—Baseball Statistics are two separate computerized spreadsheets that enable basketball and baseball coaches to speed up their record keeping. The menu-driven programs allow you to enter data in any or all of 20 categories in basketball or 16 categories each for pitching and hitting in baseball. Using the spreadsheets, you can obtain a performance record for each player and easily update player or team records. *(List Price: $63 each)*
Requires: Apple II Plus or IIe
Educational Activities, Inc.
1937 Grand Avenue
Baldwin, NY 11510
(516) 223-4666
CIRCLE READER SERVICE NO. **920**

II SERIES

▸ THE ACCOUNTANT

The Accountant is a fast and easy-to-use disk-based accounting system. Users can display monthly and yearly totals of any category on the transaction screen, and a complete on-screen summary of all accounts and categories is always available. The program can instantly retrieve, print, or remove any transaction and can balance accounts. The package includes a manual and a sample system disk. *(List Price: $120)*
Requires: Apple II, II Plus, IIe, or IIc; 48K RAM; one disk drive
Schmidt Enterprises
15841 Leadwell Street
Van Nuys, CA 91406
(818) 994-4060
CIRCLE READER SERVICE NO. **889**



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TURN YOUR MACINTOSH™ INTO A MUSIC SYNTHESIZER FOR ONLY $89.95 WITH

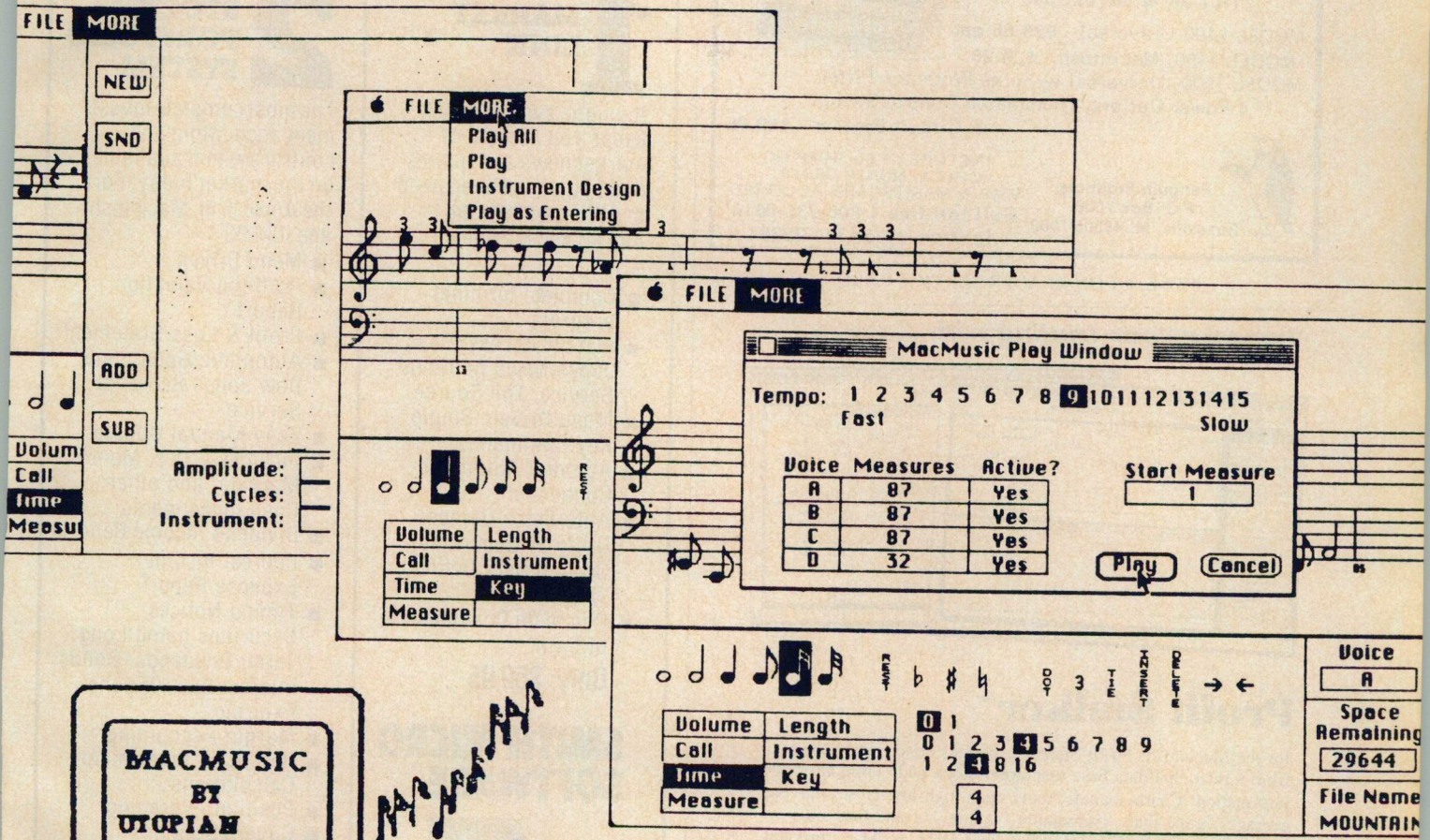
MacMusic™

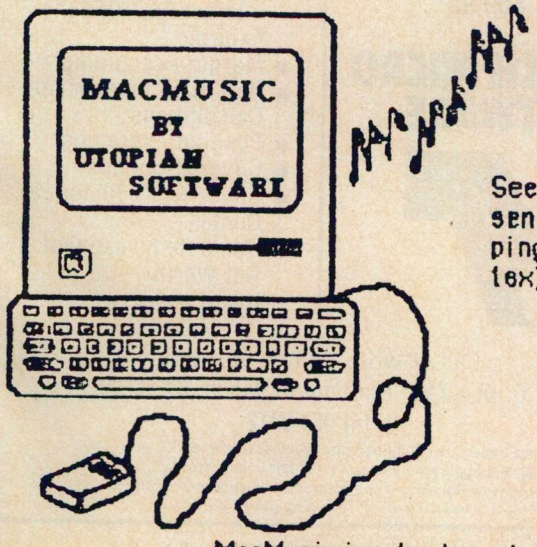
Thats right folks, MacMusic gives you the power to conduct that "four piece band" living in your Macintosh computer. What "four piece band"? I'm refering, of course, to the Macintosh's internal waveform oriented, four voice synthesizer. It has been waiting to show off its versitility and now, with MacMusic, YOU have the power to let it do its thing!

MacMusic allows you to compose and edit songs and then play them through either the Mac's speaker or its sound port in the back. The editor allows you to easily insert, delete, or change notes without difficulty, using the mouse. It also gives you the ability to generate subroutines that can be played as many times in the song as you like. Additionally, you are allowed to change the time, key, volume, and instrument of each voice at any time during the song.

The instruments making the sound for each voice can be designed by YOU with MacMusic's sophisticated waveform editor. You simply add or subtract harmonics of varying amplitude to your wave until you are satisfied with the instruments sound. And if your not sure you know how to do that, then don't despair, just tinker with the thing until it sounds the way YOU like it. And with MacMusic's 16 instruments, you'll have a great time experimenting.

So, if you want to be the conductor of your own "four piece band," don't wait till tomorrow, run out and buy MacMusic today!!!!





See your local Macintosh software dealer or, to order direct, send your check or money order for $89.95 (plus $2.50 for shipping and handling - California residents add appropriate sales tax) to:

UTOPIAN SOFTWARE
P.O. Box 40028
Long Beach, CA 90804
(213) 597-2130

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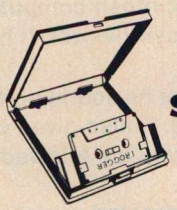

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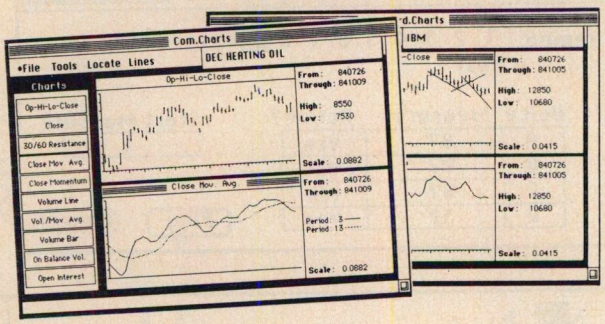

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MAC

▸ MACINTOSH VERSION OF SUPEREX HOME EXECUTIVE

The Macintosh version of the Superex Home Executive includes eight programs—the Address Book, Appointment Book/Calendar, Collectors' List, Household Inventory, Gift List, Expenses, Portfolio Manager, and Checkbook. Each program also contains a powerful report generator. *(List Price: $89.95)*

Requires: Macintosh

Superex International Marketing
151 Ludlow Street
Yonkers, NY 10705
(800) 862-8800
in NY (914) 964-5200

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II SERIES

▸ STOCK PORTFOLIO

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Requires: Apple II Plus, IIe, or IIc; 48K RAM; one disk drive; Hayes Micromodem (for online feature of Plain Vanilla III)

Iris Communications, Inc.
660 Newport Center Drive
Suite 750
Newport Beach, CA 92660
(714) 720-0800

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MAC

▸ WASTEWATER TREATMENT SOFTWARE

Five Macintosh software template packages are available for water and wastewater treatment operations. The Data Handling System provides for storage of data, calculation of parameters, and generation of reports. Users can graph data easily for trend analysis and report presentations, and the system works on Microsoft's Multiplan and Chart.

The Equipment Record System, Tool Record System, Scheduled Work System, and Unscheduled Work System templates operate on Software Publishing Corporation's PFS:File and PFS:Report. All are available as part of a complete hardware/software system or as separate, stand-alone packages. *(List Price: Data Handling System, Equipment Record System, Tool Record System, $840 each; Scheduled Work System, $1140; Unscheduled Work System, $1040.*

Requires: Macintosh

Systems/Services Engineering
3648 Eastern Drive
Dayton, OH 45432
(513) 429-2709

CIRCLE READER SERVICE NO. **892**

MAC

▸ TK!SOLVER

Specifically designed to take full advantage of the Macintosh's advanced capabilities, this new version of the TK!Solver program includes numerous enhancements based on Mac features. It uses the mouse as an integral pointing device, performs high-resolution plotting, and provides answers with 12-digit precision.

In addition, the program takes advantage of the Mac environment, providing help and explanations of error conditions. With Mac windowing, the error diagnosis can remain on the screen while users make the necessary corrections. *(List Price: $249)*

Requires: Macintosh

Software Arts
27 Mica Lane
Wellesley, MA 02181
(617) 237-4000

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II SERIES III

▸ RID DISK FOR APPLE

A consolidated version of Dymek's RID (recording interchange diagnostic) disk that works on all Apple II computers is now available. When you insert the RID disk into a disk drive, it automatically performs a series of tests that gauge the seven most critical parameters that affect interchangeability and data protection. The tests are for drive speed, noise tolerance, write/read, track alignment, positioner backlash, disk clamping, and erase crosstalk. *(List Price: $34.95)*

Requires: Apple II, II Plus, IIe, IIc, or III in Emulation Mode

Dymek Corporation
1851 Zanker Road
San Jose, CA 95112
(408) 947-8700

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▸ MISCELLANEOUS

II SERIES

▸ MR. FIXIT

If you have unprotected problem disks that can still spin in a disk drive, the data-retrieval program Mr. Fixit can scan the disks and tell you which tracks and sectors are readable. The program then lets you copy all recoverable information. Mr. Fixit can also recover deleted information, restore a lost disk catalog, edit selected disk sectors, and perform DOS hot patches and disassembler functions. *(List Price: $49.95)*

Requires: Apple II, II Plus, or IIe

Omega Microware, Inc.
177 West Hintz Road
Wheeling, IL 60090
(312) 537-3045

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▸ BIT SCRUBBER

The Bit Scrubber is a diskette residual-noise eraser that magnetically cleans and standardizes both new and used 8- and 5¼-inch and minidiskettes. Its high-energy magnetic gap ensures uniform particle orientation, and a shielded magnetic circuit protects programmed diskettes. The unit measures 9 × 4 × 1¾ inches and requires no power source. *(List Price: $49.95)*

Techstar, Inc.
8651 N.W. 56th Street
Miami, FL 33166
(305) 592-0201

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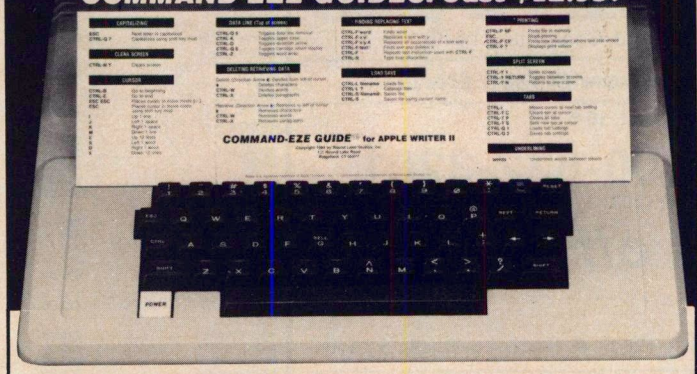

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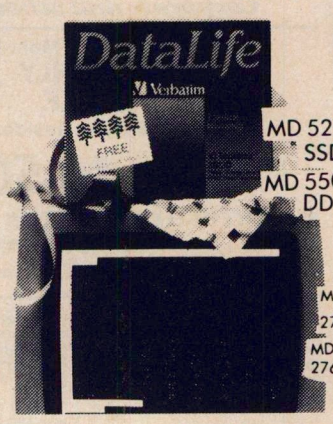

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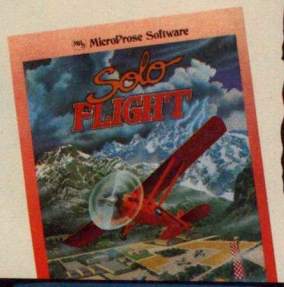

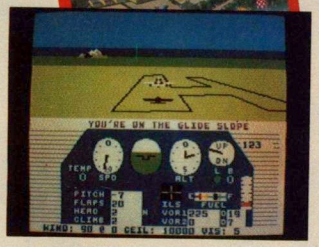

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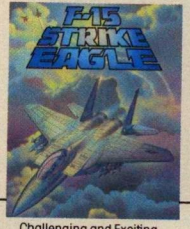

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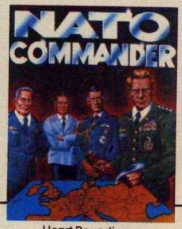

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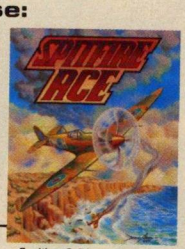

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Ivan Hall

Can an American-made Apple IIc work in Europe?

TAKING YOUR IIc TO EUROPE?

Not without some changes.

The bags were packed, the tickets and passports were in order, the family was ready, and the cab was waiting outside the door. In just a few minutes, Byron Gumblatt and family would begin The Great Gumblatt Tour of Europe: Summer of 84.

Just before leaving the house, Byron grabbed his one allowed piece of carry-on airline luggage. Securely nested in its charcoal-gray case was his virtually new Apple IIc, and it was going along to Europe because Byron had managed to convince the Gumblatt clan of its potential usefulness.

A few of the kids' favorite games were tucked away, and so were three productivity programs. One was for word processing (for Byron's intended diary), one was a database (to catalog Byron's photos as he took them), and the final one was for keeping track of daily expenses. When Byron Gumblatt got back in 21 days, he told all those who would listen, he'd have the most thorough record of a family vacation since Herodotus set out to record the wonders of the ancient world.

"Byron Gumblatt," he'd remarked to himself, "you're a genius for having thought it out," and Apple, of course, was a genius for developing the machine to carry out his plans.

Foiled

Byron had unfortunately failed to ask one crucial question: Would his American-made Apple IIc actually work once he got to Europe?

As the Gumblatt family boarded its flight, Byron was still in sweet, ignorant bliss. Little did he know that he was headed for computer heartache on the far side of the Atlantic.

Can an American-made Apple IIc work in Europe? Simply put, the answer is no—without some changes.

Geographical Restrictions

Despite its compact size, light weight, and overall portability, the Apple IIc can travel (with ease) only within the boundaries of the United States. If you take it outside those boundaries, inherent, unavoidable differences will make the IIc 7½ pounds (3.4 kilos) of inoperable computer sophistication.

The most basic of these differences is the energy that runs the IIc. Not only is the currency different throughout Europe, but so is the electrical current.

In the United States the AC (wall-plug) current for most standard household appliances is 120 volts. In Great Britain, however, that current is 240 volts and on the European continent, house current is rated at 220 volts.

Even the plugs and outlets in Europe are different. In the U.S. plugs are usually flat-pronged affairs that come in pairs. In Europe, although plugs also come in twos, they're usually round and, as we all know so well, you can't fit an essentially square peg into a round hole.

A simple and widely used method of getting around differing voltages is to use transformers and plug adapters. The first approach allows you to convert one voltage to another, and the other actually allows you to use the incompatible plug.

To achieve the miracle of voltage transformation, Apple suggests, you should use its European power supply instead of the power supply that comes with the U.S. version of the IIc. The European power supply works with 220 or 240 volts.

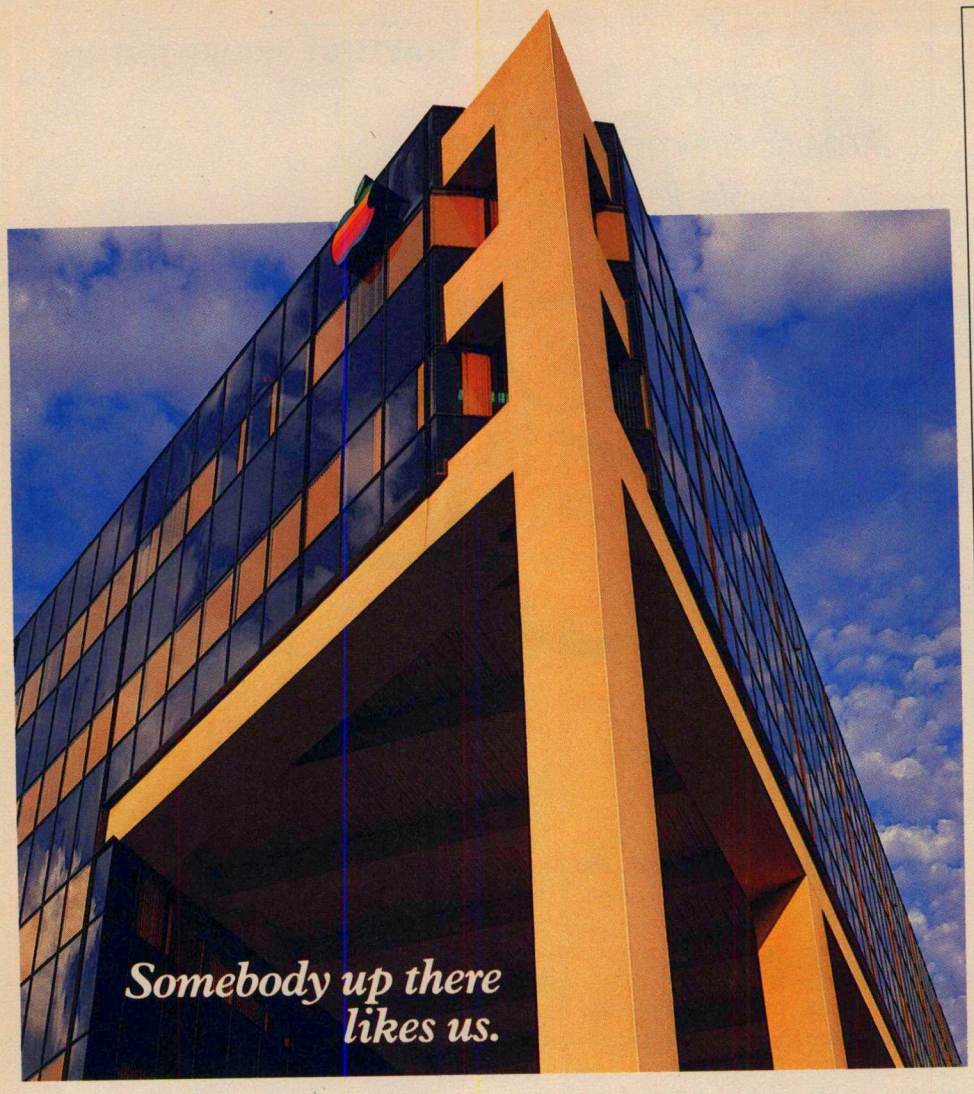
TV Troubles

The problems of differing voltage are easy to overcome, compared to the next problem. This next problem is virtually impossible to overcome, and it's the principle reason why you can't use an Apple IIc outside the United States unless you take along your own display unit. The obstacle is the differences that exist among the world's television standards.

Roughly speaking, the world's television standards fall into three different and incompatible groups. The standards are known by their initials: NTSC (National Television Standards Committee), PAL (Phase Alteration Line), and SECAM (Sequential Color with Memory). NTSC is the television standard used in the United States, one variation of PAL is used in Britain, another (incompatible) variation of PAL is used in continental Europe, and two forms of SECAM (also incompatible with each other) are used in France, the Soviet Union, and most East Bloc nations.

In practical day-to-day computer use, what these technical differences add up to is that if you hook up a IIc to the antenna terminals of a European television (or the IIc's video output to a European monitor), the result will be a scrolling image devoid of both sound and color—and the scrolling can be impossible to stop. Are you getting the picture? You won't if you don't have

JOAN HALL



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The fact is, the better you are with your Apple, the more useful Thunderclock becomes.

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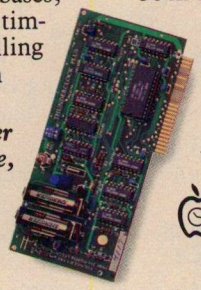

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CIRCLE 227 ON READER SERVICE CARD

your own TV or monitor.

Computers are married to the specific television system of the country in which they're sold. When you buy an Apple IIc in Los Angeles, what you are essentially buying is an Apple IIc NTSC computer. If you buy it in Vienna, Austria, you're buying an Apple IIc PAL computer.

Can you overcome these differences in TV systems? In theory, yes; in practice, no.

A Question of Chips

What makes a IIc operate with each of the different TV systems is actually quite basic and amounts to an internal difference of only one or two chips, at most. In theory, you can change these

> *The major obstacles are the difference in voltages, the shape and size of electrical outlets and plugs, and the differences in TV systems.*

chips to suit any TV system anywhere in the world. Only Apple itself can make these changes, however, and doing so is a moderately costly proposition. Apple, in fact, recommends that any such change be complete replacement of the IIc's motherboard.

In addition, unless you're planning to emigrate permanently, any chip changes will need reversing once you get back to the United States. You could, in other words, end up with a pocket full of chips and very little spare change once the process was said and done.

Nonetheless, a practical and simple solution to this complicated problem is on the horizon. Shortly (if not already) the flat-screen display unit developed specifically for the IIc will become generally available. With this unit, a IIc European power supply and a set of plug adapters, the IIc will become a truly international portable computer. Another way around the problem is to take a small portable television along when you go overseas.

The Obstacles

These, then, are the major obstacles: the differences in voltages, the shape and size of electrical outlets and plugs, and the differences in TV systems.

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CIRCLE 306 ON READER SERVICE CARD

Some minor hurdles also bear mentioning. One of these is in the all-important area of software.

As Europeans become more and more a part of the personal-computer generation, more European-based software developers will emerge. These developers will, understandably, produce programs in their native tongues. English-speaking computer users in continental Europe will be out of luck.

The point here is as simple as Ä, β, c: You shouldn't count on being able to buy programs in English anywhere you happen to be in Europe. A help screen is little help in German, after all, if your command of the language doesn't go beyond the word *kindergarten.*

Foreign Service

Finally, as sad as it is to contemplate, things do go wrong from time to time, and when you're in a foreign country, things that go wrong seem catastrophic—even if they aren't really.

Fortunately, Apple is a well-established international company represented in almost any country you care to name. Service, advice, and (yes) repair are readily available, as long as you don't stray too far from the beaten track.

If, however, your IIc should need service abroad, you'll run into one major drawback: The warranty on any Apple computer or other Apple product is valid only in the country of purchase. In other words, if your travel budget is finely tuned, repairs may have to wait until you get back home.

Unfortunately, the preceding discussion of the Apple IIc abroad is purely academic for Byron Gumblatt who, on touchdown in Frankfurt, quickly realized he was in big trouble. For the next 20 days, in fact, Byron carried his Apple IIc slung over his shoulder (still securely nestled in its carrying case) as though it were an albatross around his neck.

All joking aside, however, the Apple IIc is, as advertised, a compact, lightweight, and highly sophisticated computer. If users fail to comprehend the current limits of that portability, they must be forgiven this shortcoming, as Apple must be forgiven the oversight in not making those limits perfectly clear. ✚

Phil Tintner, a newcomer to personal computers, is a free-lance producer/director with the Austrian radio-and-television network, ORF. He is also a foreign correspondent for the TV series "European Journal."

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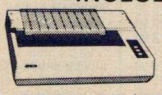

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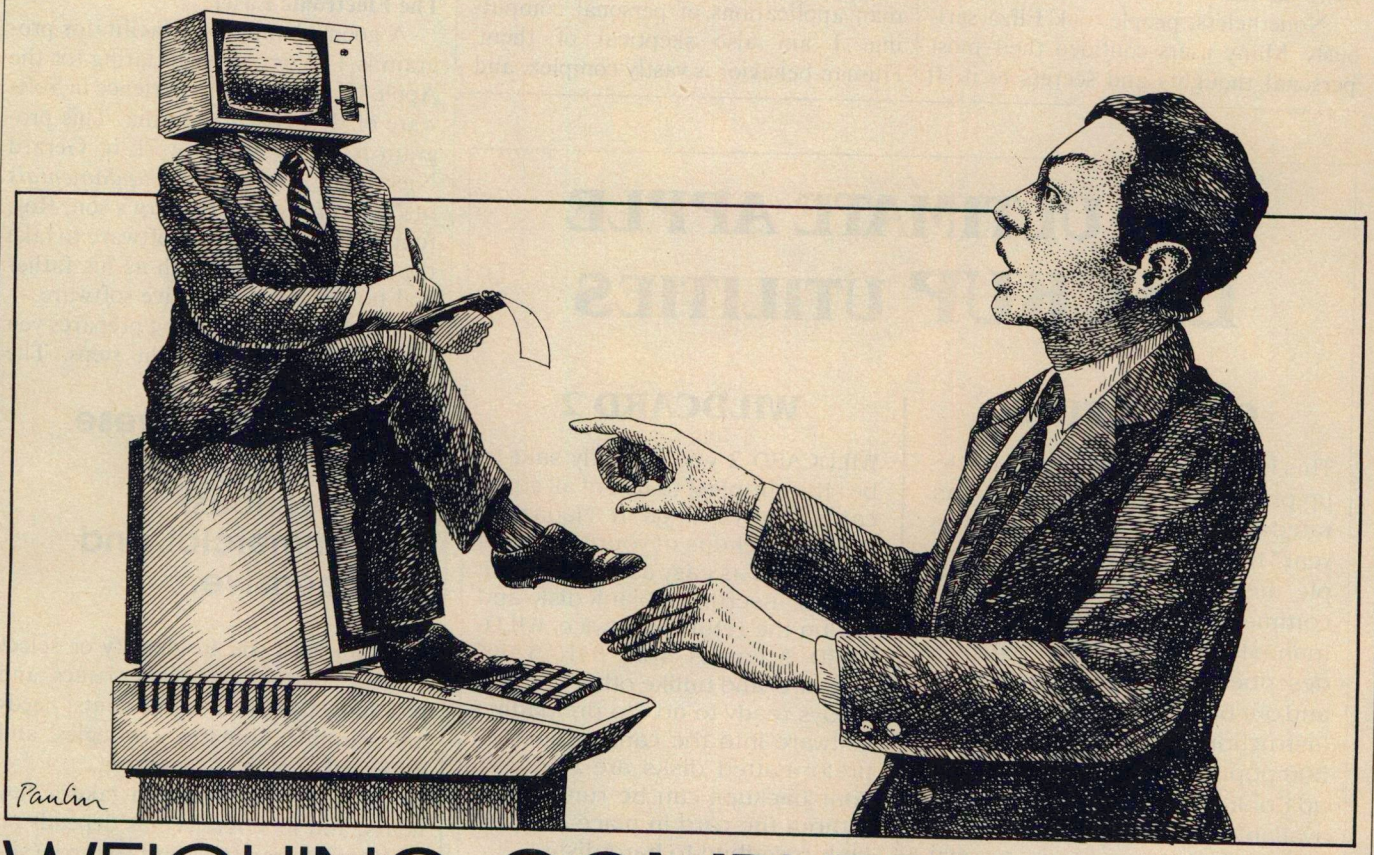

WEIGHING COMPUTER ADVICE

I used to be a psychologist in a previous life (five years ago), so I've been intrigued by the recent emergence of software that claims to help you solve problems, develop skills, and get along with others.

The first psychological computer program was probably Eliza, created by Joseph Weizenbaum of MIT in the mid-60s. Weizenbaum taught Eliza to play the role of a nondirective psychotherapist. In this sample interaction between Eliza and a young woman, the computer's responses are printed in capital letters.

Men are all alike.
IN WHAT WAY
They're always bugging us about something or other.
CAN YOU THINK OF A SPECIFIC EXAMPLE
Well, my boyfriend made me come here.
YOUR BOYFRIEND MADE YOU COME HERE
He says I'm depressed much of the time.
I AM SORRY TO HEAR YOU ARE DEPRESSED
It's true. I am unhappy.
DO YOU THINK COMING HERE WILL HELP YOU NOT TO BE UNHAPPY
I need some help, that much seems certain.
WHAT WOULD IT MEAN TO YOU IF YOU GOT SOME HELP
Perhaps I could learn to get along with my mother.
TELL ME MORE ABOUT YOUR FAMILY
. . . You are like my father in some ways.
WHAT RESEMBLANCE DO YOU SEE
. . . You are afraid of me.
DOES IT PLEASE YOU TO BELIEVE I AM AFRAID OF YOU
My father is afraid of everybody.
WHAT ELSE COMES TO MIND WHEN YOU THINK OF YOUR FATHER
Bullies.
DOES THAT HAVE ANYTHING TO DO WITH THE FACT THAT YOUR BOYFRIEND MADE YOU COME HERE

Despite such insights, Weizenbaum's program was more of a linguistic breakthrough than a psychological one. Eliza had about as much psychological knowledge as a toaster and didn't know a superego from a supernova.

DOUG PAULIN

Eliza was programmed to analyze, and parrot back in slightly transformed ways, what was said to it. Had the woman typed, "You are tuba of pickles," Eliza would have responded, "DOES IT PLEASE YOU TO BELIEVE I AM TUBA OF PICKLES." Weizenbaum named his program after Eliza Doolittle, who could be taught to talk like an aristocrat but not necessarily to be one.

Nonetheless, people took Eliza seriously. Many users confided their most personal thoughts and secrets to it. It seemed that people were ready and willing to enlist computers to help solve their personal problems.

That lesson has not been lost on software developers, who have released several psychological-software packages in the last year. Unlike Eliza, which was simply an academic exercise, these new programs are serious, commercial, and expensive.

Although I welcome these more human applications of personal computing, I am also skeptical of them. Human behavior is vastly complex, and much of our knowledge of it is tentative. It seems premature to expect a computer to understand enough about people to give good advice.

Today's psychological software has two main approaches. Some programs act as *facilitators*, helping users generate, analyze, and implement solutions of their own. Others act as *advisers*, generating the strategies and solutions themselves.

The Electronic Easel

A good example of a facilitator program is The Art of Negotiating for the Apple III ($495) by Experience in Software of Berkeley, California. This program is based on the work of Gerard Nierenberg, author of *Fundamentals of Negotiating*. Nierenberg's son, Roy, founded Experience in Software to take the work of experts such as his father and turn it into interactive software.

The Art of Negotiating prepares you for a negotiation in eight steps. The program asks you to identify or select subject matter, objectives, issues and positions, factual disagreements, needs and gambits, climates, strategies, and an agenda for the negotiation.

Unlike Eliza, these new programs are serious, commercial, and expensive.

The whole process can take a few hours, and its effectiveness depends on whether you can structure your own situation in the program's terms. When I applied it to an upcoming negotiation of my own, it stimulated my thinking, steered me to some interesting insights, and suggested some general strategies that might be useful.

I could have gotten the same benefit from reading Nierenberg's $14.95 book, however. The program serves mainly as an electronic easel, remembering your answers and making sure you don't skip steps. I wanted it to do more, save me some work, draw some conclusions, be intelligent. But it seemed to step back and say, "Hey, this is your problem, you do the work."

For example, after I'd listed the objectives of both sides, the program asked me to choose those that were conflicting. I thought it would suggest ways of resolving these conflicts, but it didn't. Instead, it glibly reminded me that the remaining, nonconflicting ones might be "harmonious objectives that

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you can point out as areas of shared interests."

Similarly, after I'd identified the two issues to be decided, I was asked to rate their importance to both parties. One was more important to me, the other to my opponent. I hoped the program would suggest a compromise in which both parties won their most important issue, but it didn't.

Focusing on Personalities

If facilitator programs sometimes shrink from drawing conclusions, adviser programs do not. I prepared for the same negotiation with The Negotiation Edge for the Apple II, III, and Macintosh ($295) by Human Edge Software of Palo Alto, California. This program, along with similar programs for sales, management, and communication, are based on personality research directed by company founder and psychologist James Johnson.

The Negotiation Edge takes half an hour or less to run, and it doesn't view negotiation as a clash of objectives, issues, positions, gambits, climates, or strategies. This program views negotiation as a clash of *personalities*.

Thus, to use The Negotiation Edge, you answer 90 brief questions about yourself. The questionnaire asks you to agree or disagree with such statements as "I usually arrive early for an appointment" and "I would rather have money than power."

Next, you answer another 90 questions about your counterpart or opponent, deciding, for instance, whether he is "ruthless" and "approval-seeking." Finally, you are asked to agree or disagree with 21 statements about the negotiation itself, including, "The power to control the proceedings is equally divided between us."

Before you tell your therapist to take a hike, though, ask yourself whether you have been caught in a trap. One trap is the 'Eliza effect.'

From these two questionnaires, the program produces an eight-page "strategy report." Since you have not been asked to identify the issues, the report cannot tell you how to resolve them (a future version may include this feature). It does contain detailed advice on how to approach the negotiation, however. Here are some samples:

WATCH FOR SNOW-JOBS. Be careful when you begin to hear too much from your counterpart. He may try to overwhelm you with information. He is extremely verbal and can talk his way into or out of many situations.

TURN QUESTIONS BACK TO SIDE-STEP PRESSURE. If your counterpart asks questions designed to intimidate you into making the deal, turn the question back to him. For example, turn back "When are you going to make up your mind" by asking him, "When do you need a decision?"

As they come out of the printer, these suggestions are impressive. "This program is smart!" you may say. "This advice really rings true!"

Before you tell your therapist to take a hike, though, ask yourself whether you have been caught in a trap. One trap is the "Eliza effect," in which the program simply repeats what you have already told it. Does it take much insight to warn that my counterpart may

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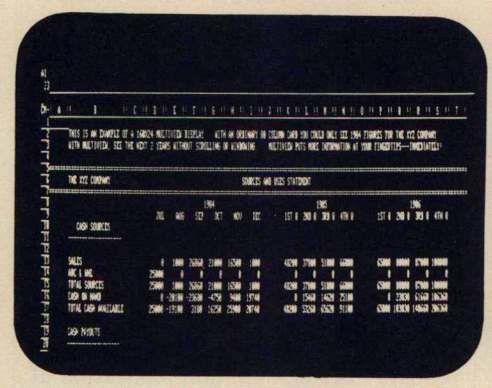

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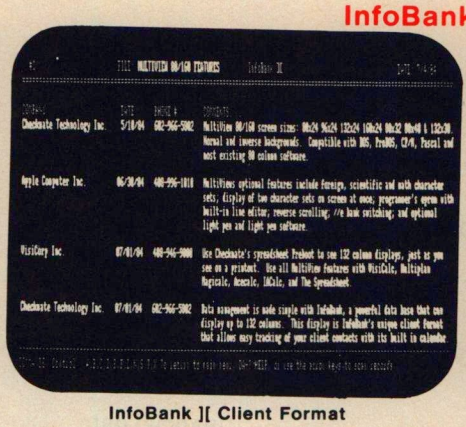

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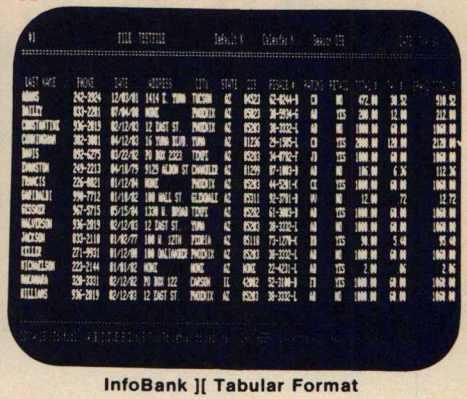

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try to overwhelm me with information, when I have already described him as talkative, smart, and exhibitionist?

Another trap, the "Polonius pitfall," involves advice that is so general it is universal. The tactic of answering a question with a question may be effective, but does it apply more to this negotiation than to any other? If not, again, I might as well read a book.

The problem is that general advice may appear deceptively individual. In one study, college students were given two brief personality tests. A week later they received a written interpretation of the results:

You have a strong need for other people to like you and for them to admire you. You have a tendency to be critical of yourself. You have a great deal of unused capacity which you have not turned to your advantage. . . . Your sexual adjustment has presented some problems for you. Disciplined and controlled on the outside, you tend to be worrisome and insecure inside. . . . At times you are extroverted, affable, sociable, while at other times you are introverted, wary, and reserved. Some of your aspirations tend to be unrealistic.

Eighty-two percent of the students described the interpretations as "good" or "excellent"—despite the fact that each student received the same interpretation! They did not recognize that the interpretation was general enough to apply to almost anyone.

Human Edge has tried to avoid the Polonius pitfall by individualizing its advice on the basis of the questionnaires. For example, a common axiom of salesmanship is to "put some excitement in your presentation." But this is good advice, according to Johnson, only if both the seller and the buyer are extroverted. An introverted seller may be unable to carry it off, and an introverted buyer may be disturbed rather than excited by it.

The Human Edge questionnaires are based on traditional principles of personality-test construction, but within the field of psychology, a good deal of controversy has arisen about whether personality tests have much relevance to behavior. Suppose you have a test that measures whether a person considers himself, or whether others consider him, extroverted or introverted. The question remains, does it predict anything about how he will behave or how you should negotiate with him?

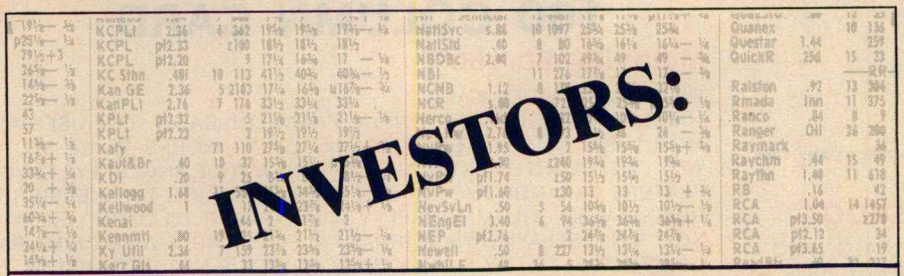
In my mind, and in the minds of many psychologists, this question is unresolved. Human Edge is planning controlled testing to confirm whether its advice is valid.

The Best Advice

Even so, using either of these programs to prepare for a negotiation is probably better than no preparation at all. If they have no other benefit than encouraging people to think about the issues and their opponent, the programs may still serve their purpose.

The best advice is probably to be skeptical of all advice. If you use these programs, don't accept and follow their suggestions blindly. Weigh them, try them on for size, and don't be afraid to dismiss them. Even if you're on the couch, the computer is a tool, not a master. Human beings are still the best judges of human behavior. ✚

John Zussman is president of Logical Arts, a software-documentation and -design firm based in Palo Alto, California. He is the author of several users' manuals and numerous articles on personal computing.



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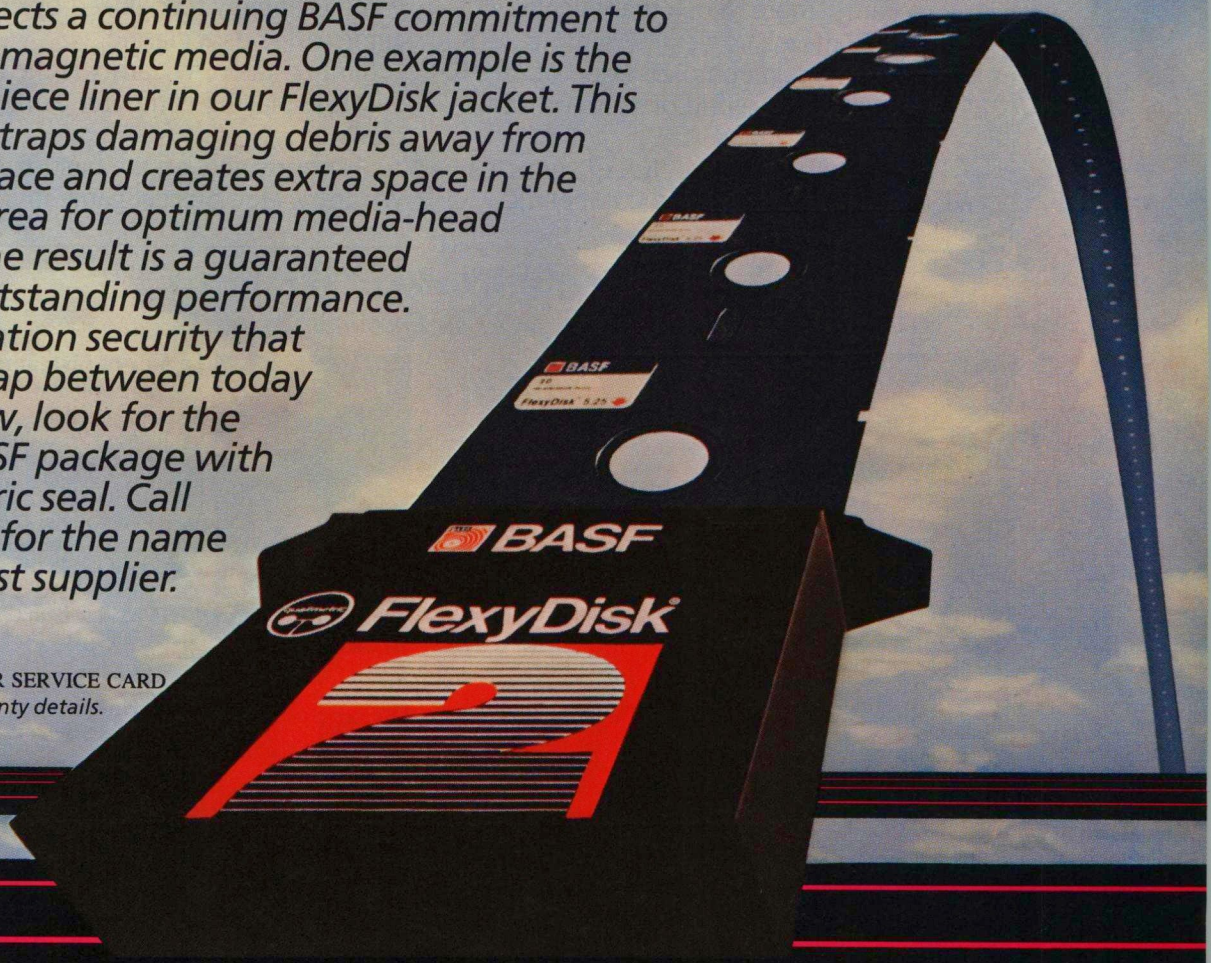

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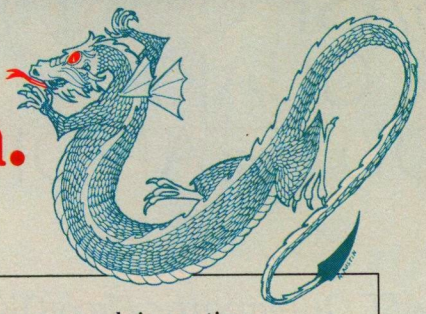

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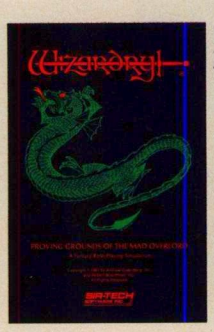

Proving Grounds of the Mad Overlord

The First Scenario

Unlike any other game you have ever played. A fascinating 10-level maze full of monsters, sorcery, traps and treasures. As you gain skills, the characters you create grow stronger, richer, wiser and better able to survive. The final goal is elusive. Your experience . . . unforgettable.

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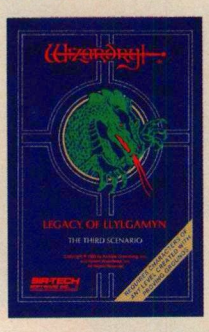

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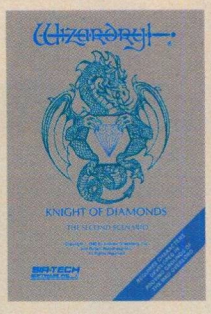

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SIFTING THROUGH THE SANDS OF EGYPT

I say, old chap, 'twas the most extraordinary archaeological expedition. There I was in the middle of the Egyptian desert, searching for the treasure of the legendary Pyramid of Ra, when Arab nomads assaulted my camp during a blinding sandstorm. The lads put up a bonny fight, but in the end those accursed camel jockeys stole everything and killed everyone, except me. All I had were my wits and a compass to get past a frightening array of obstacles, find the treasure, and escape with my life.

Sands of Egypt, a high-resolution-graphics adventure game, places you in the boots of world-renowned archaeologist Lord Charles Buckingham III. As you explore the desolate Egyptian desert, and eventually the pyramid, you pick up items, negotiate natural hazards, and solve puzzling riddles to find the treasure.

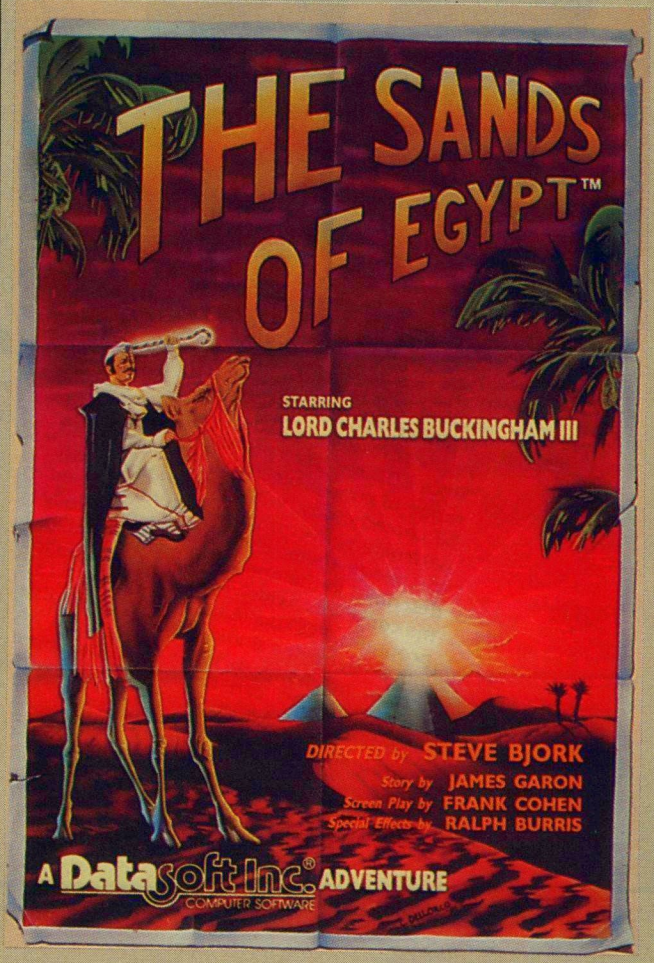
Your quest starts in the middle of the desert—sand as far as the eye can see. A compass in the lower right corner of the screen displays the directions in which you may move from any given location. With grim determination, you set off to find the treasure.

To control your movements, you use a standard array of one and two-word commands. For instance, typing LOOK provides a text description of what you can see. Some of the words, mostly compass points, may be abbreviated. For example, typing N is the same as typing NORTH.

Group Effort

Sands of Egypt seems to be a group effort. Designer James Garon has created an intriguing situation and puzzling brain teaser. You can't just follow your nose and walk away with the treasure. You must explore the desert and pick up a few necessary items—such as water. Then you must figure out how to use the items to accomplish a task.

Special-effects whiz Ralph Burris, with help from Garon, provides brilliant graphics. The desert scenes are so vivid your mouth starts drying out. The stubborn camel possesses a know-it-all smirk



and, even worse, winks at you.

If you die, you receive a shallow grave with a tombstone marked R.I.P. Programmer Brian Mountford has developed a game that performs flawlessly.

Sands of Egypt comes with two pages of documentation, which gives you background information and some hints on strategy. If you really get stuck, you can call Datasoft for assistance.

Another Indiana Jones

As I played the game, the theme from *Raiders of the Lost Ark* kept going through my head. I'm afraid I began to think more like Indiana Jones than Lord Charles Buckingham III.

You'll sink quickly into Sands of Egypt as its baffling puzzles test your deductive reasoning and occasional wild hunch. It combines all the necessary elements of an adventure game—intriguing scenario, helpful items, vexing problems, and a dash of humor—with spectacular, semianimated graphics. Sands of Egypt is so captivating you may end up adventuring until the sands of time run out.

Off to the Pyramids

I say, old chap, smashing chatting with you, but I must be off to the pyramids. There's a bloody treasure for the taking, and I've got the scepter and an idea. Tally ho!

Russ Lockwood

Sands of Egypt
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The puzzles are divided into four categories—Beginner's Assortment, American Cities, Around the World, and Art Masterpieces.

Beginner's Assortment contains pictures of Yardley Yarborough's Yacht, Ainsley Aichen's Aeroplane, and Dudley Durwinke and his car. The American Cities puzzles show a collage of landmarks in New York City, San Francisco, and Washington, D.C.

Around the World

Around the World features Paris in the spring, an artisan in Mexico, and a castle on the Rhine. The Art Masterpieces category displays *Whistler's Mother*,

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Grant Wood's *American Gothic*, and Georges Seurat's *La Grande Jatte*.

After you select a puzzle, Jig-saw displays the whole picture, complete with caption and borders, on the screen. You may study it as long as you like. After you press the space bar, the picture disappears from view, to be replaced with 24 numbered squares arranged in six horizontal rows by four vertical columns.

One piece of the puzzle appears in the bottom right corner of the screen. You decide where that particular piece should go and type a number between 1 and 24. The program automatically moves the piece to that numbered square, whether the piece actually belongs there or not.

If the piece is indeed misplaced, Jig-saw sounds a harsh buzz, but continues to display pieces in the bottom right corner of the screen.

Eventually, you'll see the misplaced piece reappear, and you can try a new location.

Jig-saw does not contain much in the way of sound effects. In fact, the program emits a harsh buzz only when you misplace a puzzle piece.

If you become adept at placing 24 pieces in 24 moves, you'll be able to play Jig-saw in silence, except for the hum of the Apple itself.

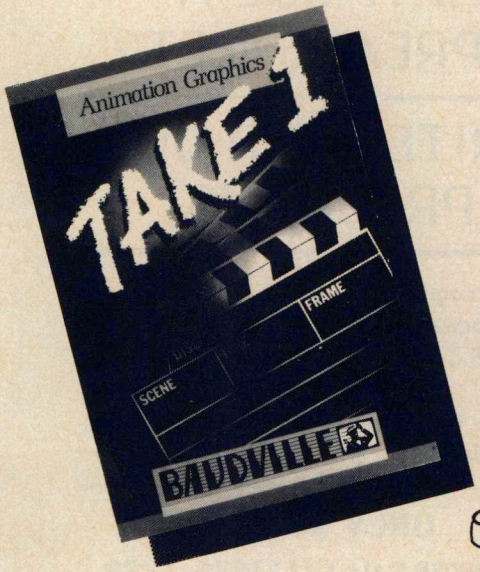
Jig-saw is a colorful game, and some of the puzzles are difficult to solve. Bear in mind that each puzzle contains 24 pieces and takes a minimum of 24 moves to complete. Seurat's *La Grande Jatte* took 60 moves to reassemble, although subsequent efforts lowered my move number to less than 30.

The Thrill Is Gone

Jig-saw's individual pieces are all square, all right side up, and all presented one at a time, effectively eliminating most of the appeal of a real jigsaw puzzle. You can't match two pieces independently of the main puzzle or experience the thrill of attaching a group of pieces to an edge piece.

Finally, completing one of Jig-saw's 24-piece puzzles is not nearly as satisfying as squeezing in the last piece—with all its pod-like extensions—of a 2500-piece puzzle.

Jig-saw brings colorful scenes before your eyes, but the limited number of pieces and puzzles challenges you for only a half a day or so. The program's graphics are very good, but can never convey the full intensity of an art masterpiece or the idyllic beauty of a picturesque scene. Puzzle enthusiasts will find regular



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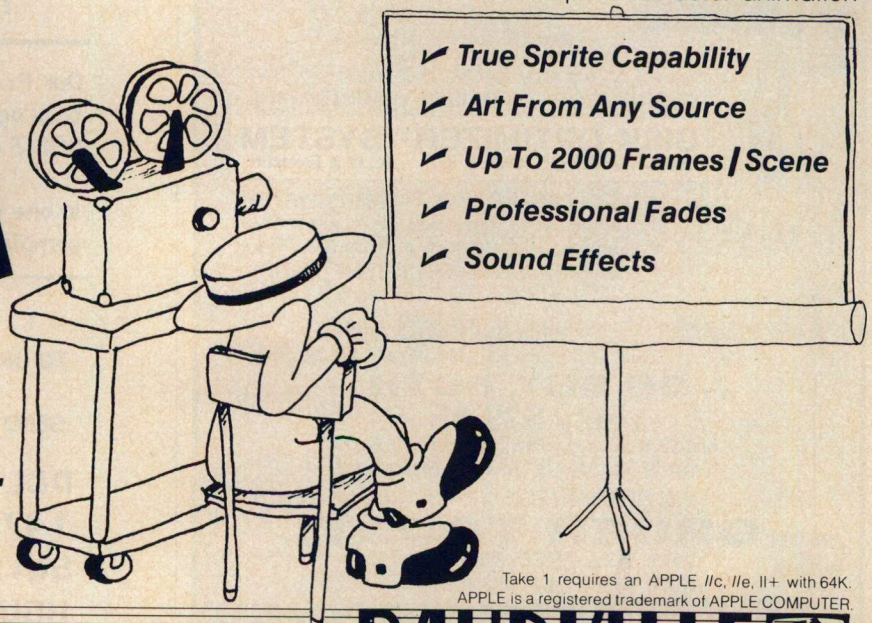

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Your eight infantry and two cavalry legions represent the best and worst that Rome has to offer. Caesar's favorite, the veteran tenth legion, is a crack force of elite legionnaires who march fast and attack with deadly efficiency. On the other hand, the 14th infantry legion under Quintus Titurus Sabinus moves slowly, fights poorly, and cracks easily.

Overall, the quality of most legions is closer to the 10th than the 14th. The two cavalry legions, under Labienus and Publius Licinius Crassus, move faster than the infantry legions do and are best used for attack, not defense.

Swords and Horse Heads

The screen displays infantry legions and tribes as swords and cavalry units as horse heads. An eagle represents Caesar and his 10th legion. The Roman legions are supposed to be imperial red, but they turn out to be imperial orange—at least on an Amdek monitor. Likewise, the Gallic tribes are supposed to be barbarian blue, but turn out to be purple.

Moving the legions is as easy as positioning an oversized cursor over the unit and ordering it to move north, south, east, and west by using Control-I, Control-M, Control-K, and Control-J, respectively. An arrow indicates the direction the unit will move, and up to eight orders can be entered in sequence. In reaction to changing battlefield conditions, you can delete orders at any time.

While the cursor is over a unit, Roman or Gallic, the name of the legion or tribe appears on the screen, along with its manpower rating and sword strength.

The terrain plays an important role in movement and in combat. Scrolling the map of Gaul across the screen reveals two types of terrain—the green trees of forests and the blue, purple, orange, and green contour lines of hills. You cannot

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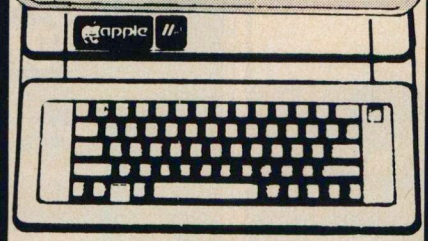

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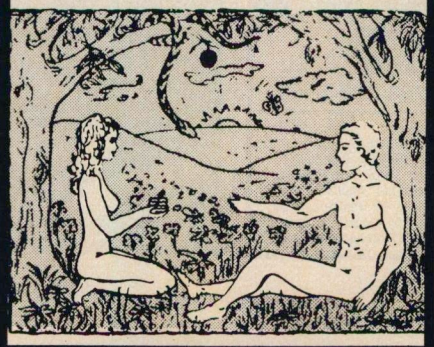

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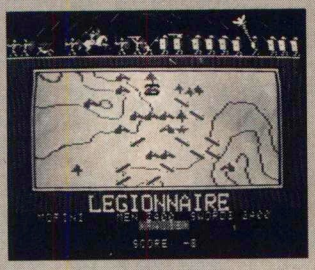
march legions through forests, and moving uphill is slower than moving downhill.

In combat, the forests tend to fragment the Gallic tribes and funnel their attacks. If you are a skilled tactician, you can pin the barbarians and then attack them from the flank.

The hills confer decisive advantages, but only to those forces on top. Units that attack uphill suffer heavy losses, which helps the defending unit successfully counterattack downhill.

The real trick is to balance your attack and defense. One effective tactic is to march to the top of a hill and await the Gallic attack. The legions are well rested, but the tribes are not; and the tribes must attack uphill. Still, some Gallic tribes are quite capable of throwing you off the hilltop, pursuing you down the hill, and finishing you off in the valley.



Legionnaire's graphics are somewhat lackluster, although the top of the screen contains an interesting frieze of a legion attacking a tribe. In combat, the defending unit flashes brightly as the strength of the attacker and defender declines.

Bleeping Barbarians

The sound effects are worse than the graphics, however. A couple of mediocre bloops and beeps are supposed to represent thousands of barbarians tramping through the fields and the ring of swords clashing in battle. Well, the fan on the Apple makes better battle sounds. If a legion or tribe is completely destroyed, you'll hear a high-pitched death squeal.

Legionnaire is a historical war game, not an arcade game, so it challenges your wits instead of your wrist. Although not academically precise in military detail, it nevertheless recreates an accurate simulation of ancient military campaigns—complete with terrain effects and fatigue and morale problems. Despite its lackluster graphics and pitiful sound effects, Legionnaire captures your imagination and attention and truly tests the strategy and tactics of even veteran Caesars.

Russ Lockwood

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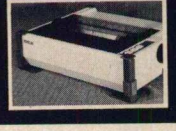

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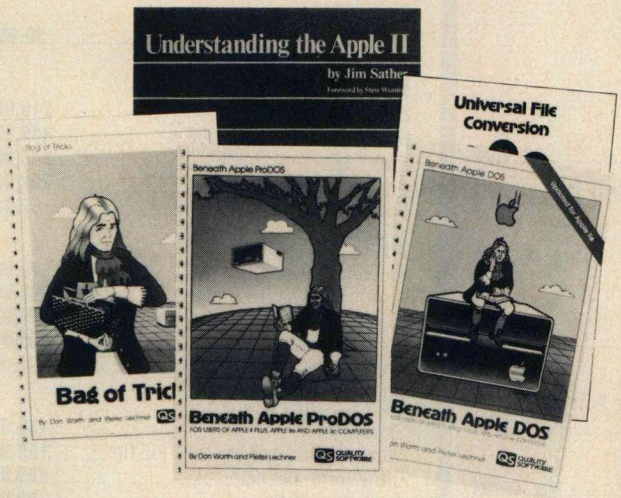

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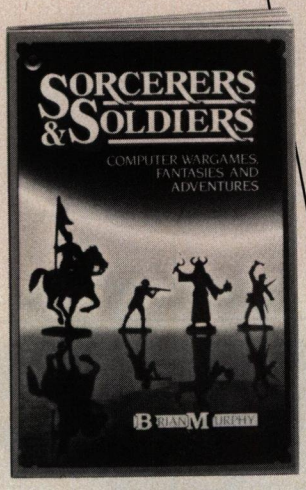

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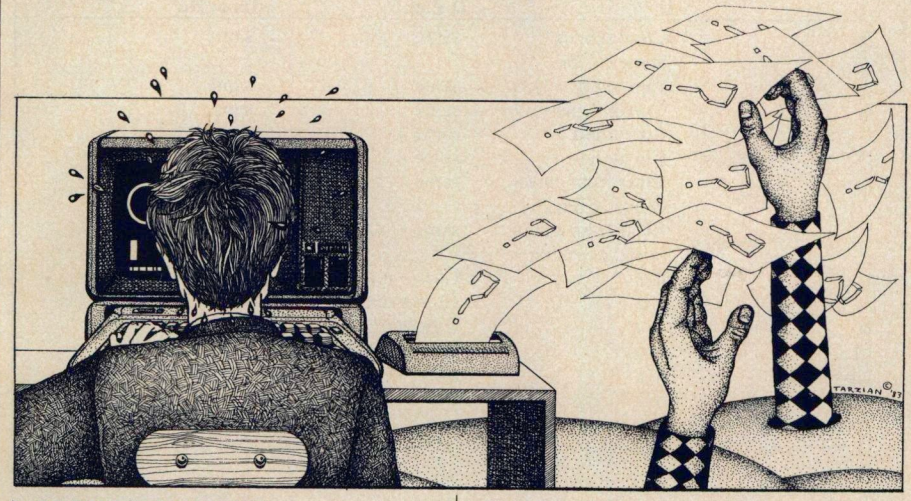

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Q. *When I edit a line containing a string, I frequently find extra spaces. Where did they come from, and how can I get rid of them?*

A. *You* put the spaces in the string by tracing blanks on the screen; Applesoft put the blank spaces on the screen to provide a readable listing format. The spaces do increase readability, but at what price? The only easy way to eliminate these accidental spaces is to retype the string from scratch. Experienced users sometimes go back to the Escape mode and skip the spaces, but you'll need a bit of practice to perfect this technique.

There is a better way to eliminate these spurious blanks in your listing: On a 40-column screen, type POKE 33,33—on the 80-column screen, type POKE 33,73. The 80-column POKE works reliably only with the Apple 80-column cards. These commands narrow the screen to 33 or 73 characters and inhibit the padding. The listing won't be as readable as before, but you'll find it eminently editable. To restore the screen to its normal width, type TEXT.

If you have extensive editing needs, you may want to invest in a commercial editing program. Global Program Line Editor (GPLE) from Beagle Brothers is probably the most popular of these enhancements. GPLE and other similar programs provide more powerful editing capabilities, including Insert and Delete modes, string substitutions throughout the entire program, and so on.

Using one of these programs, you can easily remove extra spaces from program lines and write or edit program lines without inadvertently adding extra spaces.

Q. *Many features are missing from Applesoft, including PRINT USING and LINE INPUT. Furthermore, some of the existing commands and functions (such as RND and WAIT) don't work as expected. Can I buy a better BASIC for my Apple?*

A. Yes and no. Several more powerful versions of BASIC are available, including MBASIC from Microsoft and CBASIC from Digital Research. To use these languages, however, you must have a Z80 card, master a new operating system—CP/M—and lose compatibility with normal DOS 3.3 or ProDOS programs or data files.

Another way to gain new features is to extend Applesoft. Applesoft provides three ways to add new commands: CALL, USR, and the "ampersand hook." When Applesoft finds one of these in a program, it looks for an assembly-language subroutine.

For a variety of reasons, using the ampersand command is the most common method of extending Applesoft. If you have not installed a subroutine and connected it to the ampersand command, nothing will happen. When you have installed an ampersand routine, using it is as simple as including something like

```
&PRINT USING>"$0000.00";A
```

or

```
&WAIT 30
```

in your program.

Writing subroutines to use the ampersand hook is not a trivial task, but most enhancements you may require are already available in commercial packages. One such package is The Routine Machine from Roger Wagner Software. Another source for ampersand routines and information about how to create your own is *All About Applesoft*, edited by Val Golding and available from CALL A.P.P.L.E. If you have a 128K Apple IIe or an Apple IIc, both Cat Graphics (Penguin Software) and Beagle Graphics (Beagle Bros.) provide ampersand routines to let you easily use the double-high-resolution capabilities of your computer (see "Seeing Double" on page 62 of this issue).

APPLESOFT EDITING

Q. *I am new to Applesoft programming and am having trouble editing programs on my Apple IIc. After moving the cursor, I sometimes end up with a partial line, sometimes I end up with line 0 containing my edited line, and*

DONNA TARZIAN

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sometimes I just get a beep and a SYNTAX ERROR message. What am I doing wrong?

A. The Edit mode of the Apple has long been mysterious to new users. To start editing, you simply press the Escape key, but to *successfully* edit a program line, you must observe a simple rule for editing on the Apple: Trace the *whole* line. When you press the Escape key, you are moved into the Escape mode. In this mode, the program interprets some of your keystrokes as commands. (See figure 1 for a list of the valid commands.) The Escape mode lasts until you press a key that is not a valid command. You can enter program text only when you are in the normal nonescape mode.

To edit a program, enter the Escape mode by pressing the Escape key; move the cursor to the start of the line to be edited—the first digit of the line number—get out of the Escape mode by pressing a noncommand key such as the space bar; and trace the whole line, using the right-arrow key. When you get to the spot you want to change, type the changes and then continue tracing with the right-arrow key. At the end of the line, press Return.

If you get a SYNTAX ERROR message, you didn't get out of the Edit mode soon enough. The Apple caught only part of the line.

If you get a partial line when you List the program, you pressed the Return key before the end of the line.

If you get a new program line (frequently line 0) and the old line didn't change, you didn't trace the whole line number.

If you have an Apple IIe with an 80-column card, you should activate the card with a PR#3 to enjoy the benefits of the Escape mode cursor, an inverse plus sign. This way, you'll know when you are in the Escape mode and when you are in the normal text-entry mode. Apple IIc owners will see the Escape cursor whether they activate the 80-column card or not. Apple II or II Plus users are stuck with a plain, flashing cursor at all times. ✚

KEY	ACTION		
	II[1]	II Plus	IIe or IIc
@	Clear screen; home cursor	same	same
A	Cursor up	same	same
B	Cursor right	same	same
C	Cursor left	same	same
D	Cursor down	same	same
E	Clear from cursor to end of line	same	same
F	Clear from cursor to end of screen	same	same[2]
I	n/a	Cursor up	same
J	n/a	Cursor left	same
K	n/a	Cursor right	same
M	n/a	Cursor down	same
Up Arrow	n/a	n/a	Cursor up
Left Arrow	n/a	n/a	Cursor left
Right Arrow	n/a	n/a	Cursor right
Down Arrow	n/a	n/a	Cursor down
R	n/a	n/a	Convert lowercase to uppercase[3]
T	n/a	n/a	Stop converting lowercase to uppercase[3]
4	n/a	n/a	Select 40-column screen[3,4]
8	n/a	n/a	Select 80-column screen[3,4]
CONTROL Q	n/a	n/a	Deactivate 80-column card[3]

Notes:
1. Without Autostart Monitor ROM. You have the Autostart Monitor if the disk drive starts up when you turn the computer on. All Apple II Plus computers have the Autostart Monitor; Apple II computers may or may not have this ROM, depending on how old they are.
2. These commands don't stick—one cursor move is all you can do. You must press Escape prior to each command.
3. These commands work only when the 80-column card is active. PR#3 activates the 80-column card.
4. These commands are unnecesary on the IIc, as the computer normally translates BASIC instructions from lowercase to uppercase. DOS 3.3 commands are not translated; ProDOS commands are.

Figure 1: Escape mode commands

Please send your questions and problems to Rescue Squad, A+, 11 Davis Drive, Belmont, CA 94002.

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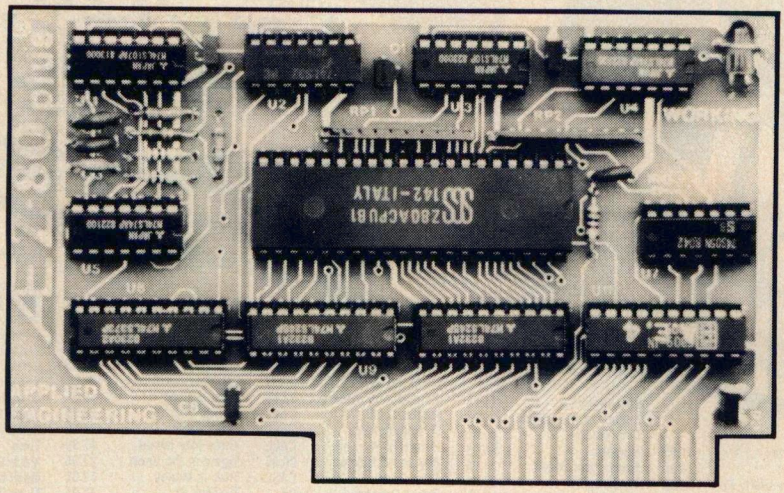

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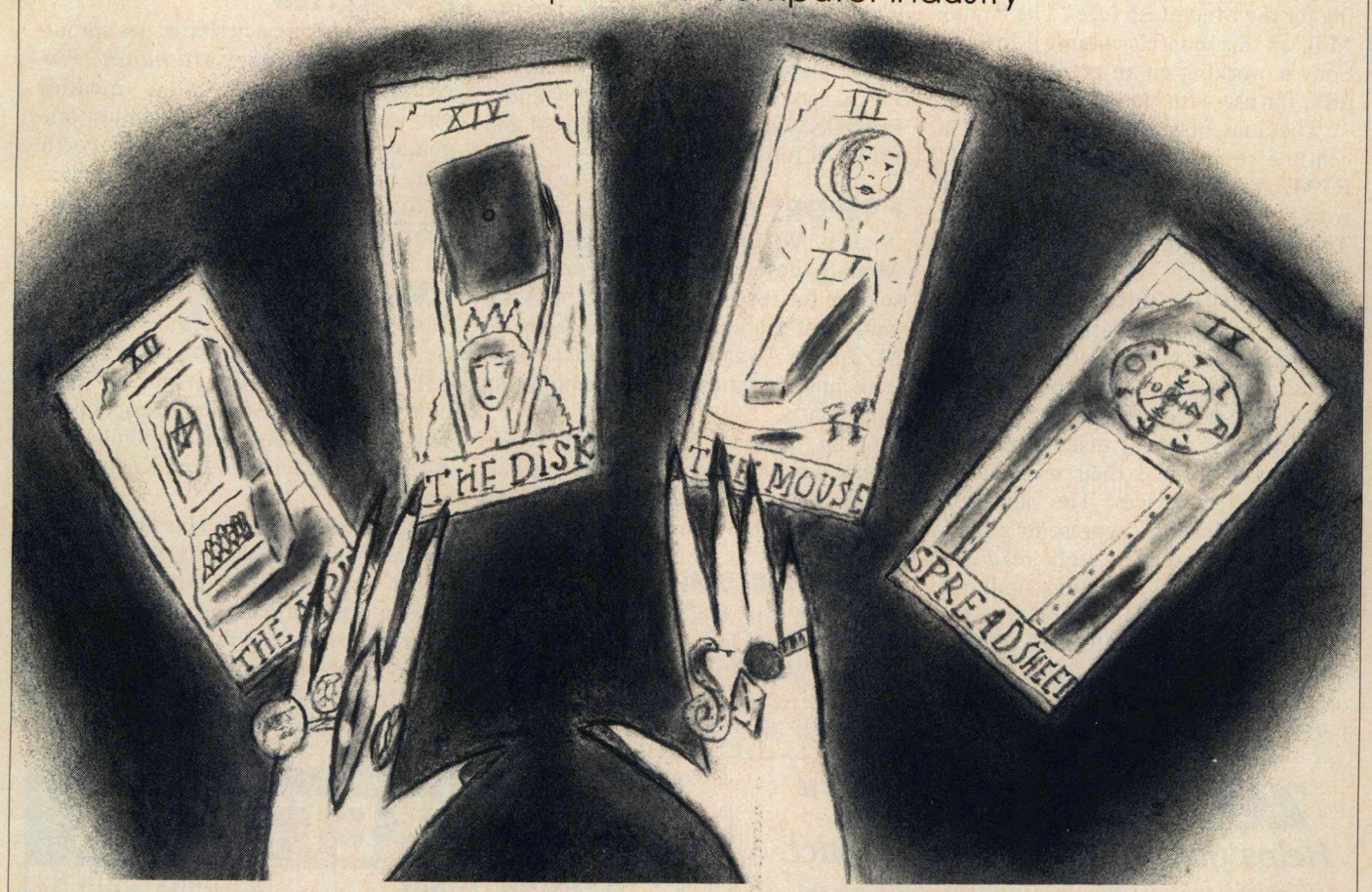

LOOKING FORWARD

What's ahead for Apple in 1985? A look into my crystal apple should provide some revealing hints. First, to set the mood, let me put on my bandanna, play some ethereal music, and pull down the shades. Ah, much better. Now let's get out the crystal and see what's in store for the coming year.

I see a rainbow arched over a large stadium. It looks like—yes, it is—Stanford Stadium here in Silicon Valley. The 1985 Super Bowl game, Apple's traditional kickoff for the new year is about to begin.

Now I see that the fans are taking seat cushions out from under their seats and holding them up. A voice in the distance intones, "... and now a word from our sponsor."

The image is changing. It's another surrealistic commercial poking fun at IBM. Now the image is fading.

Another image emerges—this time of an auditorium. It's the Apple stockholders' meeting. A good mood prevails as talk about the just-introduced AppleBus network and laser printer swirls around the room.

A blur of images—what looks like Apple headquarters in Cupertino takes shape. Snippets of conversation float by: "We won't be introducing any new computers this year ..." "... yeah, I'm new here. My job is to develop the next-generation home/educational computer for Apple. It'll be based on the 68000 and have a 3½-inch disk drive..." "Wow, that Turbo Mac is sure nice, with its snow-white look, its megabyte of RAM, and built-in 20-megabyte hard-disk drive. Too bad it won't be out for a while." "... and that strategy works well with the 3½-inch floppy for the Apple II."

The voices are getting so faint that I can't hear what they're saying any longer. The blurred images are swirling around and around. All I can see is smoke and haze. Well, that must be all that my crystal apple is willing to reveal for now.

▸ PASCAL, FORTRAN, ASSEMBLER FOR MAC

SoftTech Microsystems has several programming tools available for developers of Macintosh software. The UCSD Pascal Development System allows Pascal programs for the Apple II series, Apple III, and IBM PC to be ported over to the Macintosh. The FORTRAN-77 Development System provides an ANSI-77 subset of FORTRAN, and the Advanced Development Tool Kit features a symbolic debugger, 68000 assembler, and a linker. Contact SoftTech Microsystems, 16885 West Bernardo Drive, San Diego, CA 92127; (619) 451-1230.

LILLA ROGERS

▸ OPTICAL DISK FOR MAC

In the September "News+," I mentioned that Sony and Apple had made an agreement to share hard-disk technology. It now looks as if Sony will not supply Apple's initial hard-disk offering for the Macintosh (see "The Rumor Mill" in this month's column). Instead, Sony is working on an erasable optical disk, for use with the Mac.

The Sony magneto-optical disk is 30 centimeters in diameter, rotates at 900 RPM, and has 43,750 tracks per side with 25 1-kilobyte sectors per track. The disk is made of the same acrylic material as that of Sony's compact audio laser disks. Each side of the disk offers a whopping gigabyte of storage. A gigabyte is a billion bytes, which is a thousand megabytes or about one million double-spaced pages!

Previously, optical disks were read-only, which limited their use as computer storage devices. The new Sony erasable optical disk represents a major breakthrough, since it can be read from and written to in a fashion similar to that of a traditional floppy or Winchester disk. Sony claims that the disk has an average access time of 100 milliseconds and a transfer rate of about 320 kilobytes per second.

▸ NEW PASCAL FOR PRODOS

Apple's Pascal version 1.2 currently supports the use of the ProFile hard disk, but the ProFile must first be formatted with the Pascal Filer. Even though Pascal 1.2 can access ProDOS files via the ProDOS I/O unit, the two operating systems are still separate. Apple plans to release a new version of Pascal soon that operates directly under ProDOS, which should give Pascal and ProDOS full compatibility.

▸ REPORT CARD

Niklaus Wirth, creator of Pascal and Modula, deserves an A+ in computer science for recently receiving the Association of Computing Machineries A. M. Turing Award "for contributions of a technical nature to the computing community."

John Sculley, president of Apple Computer, Inc., gets an A+ in marketing for being chosen as *AdWeek*'s 1984 Marketer of the Year.

▸ STOCK SLUMP

Just how valuable is John Sculley to Apple? Well, last fall a rumor went around Wall Street that Sculley was going to resign as president of Apple. Although the rumor was false, Apple stock dropped almost 20% in just a few days. After Sculley made several vigorous denials, the stock went back up again as quickly as it had fallen.

▸ MAC DEVELOPER NEWSLETTER

Yet another Mac newsletter has sprouted. *MacTech, The Macintosh Programming Journal*, is a monthly publication that covers assembly language, BASIC, Pascal, C, and Forth. MacTech is available for $24 a year from MacTech, P.O. Box 846, Placentia, CA 92670; (714) 993-9939.

▸ MUPPET MESS

Jim Henson of Muppet fame has let the development of Muppet software run wild. At this writing, four different companies are producing Muppet products—Henson Associates, Simon and Schuster, Brøderbund, and Koala Technologies.

Koala worked with Henson to develop the Muppet Learning Keys, a keyboard for kids. The problem is that most of the Muppet software other vendors are producing does not work with the Muppet Learning Keys. More cooperation is needed among the Muppet developers. Are you listening, Kermit?

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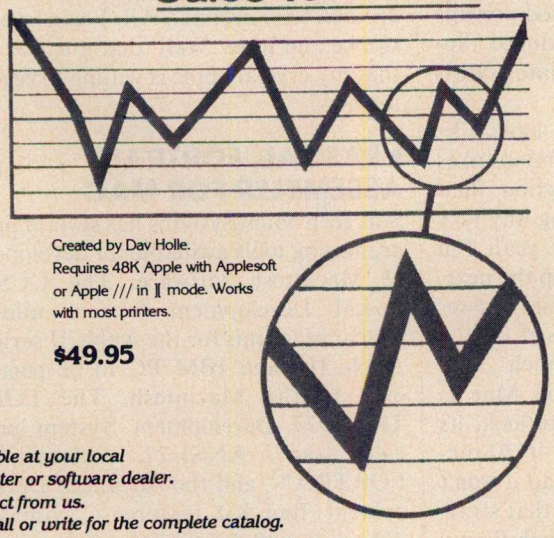

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▶ APPLEBUS FOR IBM PCS

Tecmar, one of the leading producers of IBM peripheral products, has announced a plug-in board for the IBM PC, XT, and AT that would let these computers hook into the AppleBus low-cost network. This board will help create a new level of compatibility between IBM computers and Apple computers.

▶ APPLES OVERSEAS

Apple is doing a great amount of business overseas. This past fall, Apple's board of directors met with Mexico's Minister of Commerce and other top governmental officials to celebrate the opening of Apple de Mexico's new manufacturing facility in Mexico City. The plant will manufacture Apple IIe's for Mexico, Latin America, and the Caribbean. Mexico's Technical Institute of Monterrey plans to order 16,000 IIe's for delivery over the next three years.

Apple has also extended its collegiate ties to include Sweden's Lund University, which has already ordered 1000 Macintosh computers. It takes only about a week to adapt the Mac to a foreign language, by using the Resource Editor to modify the user interface. This gives the Mac a clear advantage over the IBM PC in the international market.

▶ THE RUMOR MILL

This space is set aside for the spurious, curious tidbits floating around the industry. If you overhear any hot rumors, write to The Rumor Mill, c/o *A+*, 11 Davis Drive, Belmont, CA 94002.

Apple to Restructure

The Apple organization may be going through yet another restructuring. The idea is to split the company into a business division (formerly the Mac and the Lisa divisions) and a home/educational division (formerly the Apple II and III divisions).

Although it makes some sense to divide the company into market-specific divisions, rather than product-specific divisions, the new strategy doesn't seem to take into account the fact that 40% of the Macintoshes being sold are going into the home/education market and that the Apple II series is the most popular computer in the small-business market.

New Drives for Apple II Family

As hinted earlier in this column, Apple may be planning to introduce the 400K Sony 3½-inch disk drive as an add-on for the Apple II family. This drive provides almost three times the amount of storage that the current 5¼-inch drives provide, and it also opens up the possibility of some type of data compatibility with the Macintosh.

Apple's Japan Connection

Apple is definitely trying hard to be first in line for new high-tech computer parts from Japan. In addition to the disk drives from Sony and JVC, Apple is eyeing many other Japanese components for possible use in future Apple products.

In fact, rumor has it that Apple's Accessory Product Group is spending more than $150 million this year on samples of advanced Japanese electronic items, such as flat-panel displays, disk drives, IC chips, and other components.

Hard Disk for Mac

According to sources close to Japanese electronic giant JVC, Apple has expressed a keen interest in JVC's 3½-inch 10-megabyte Winchester drive. If the rumor is true, the Mac may someday have a sleek, compact hard-disk drive that measures 4 inches wide by 5 inches long by 1½ inches high. +

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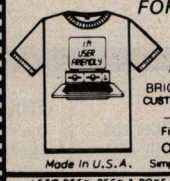

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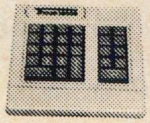

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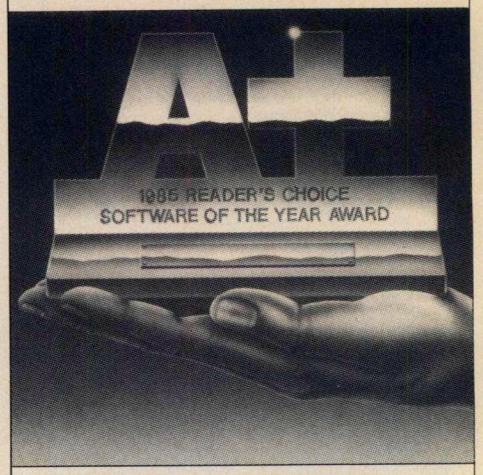

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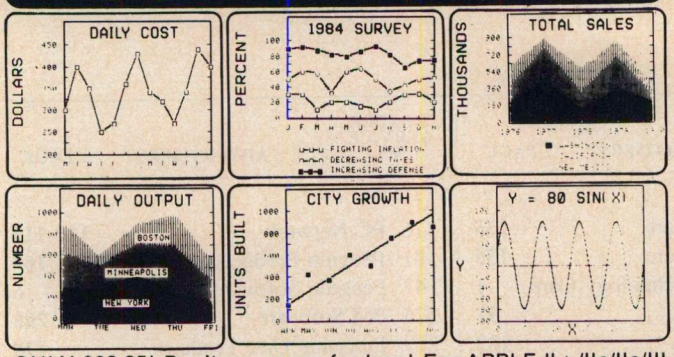

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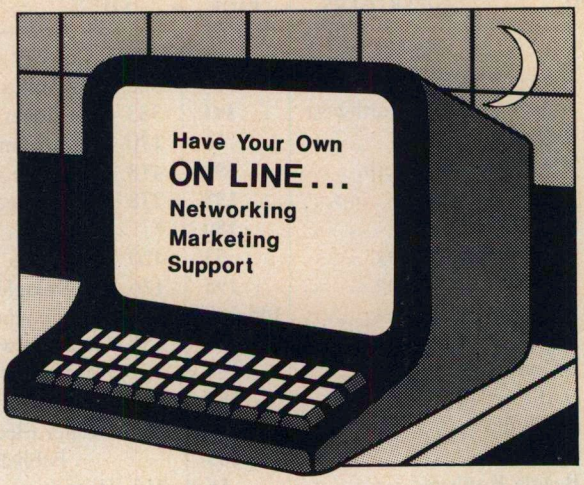

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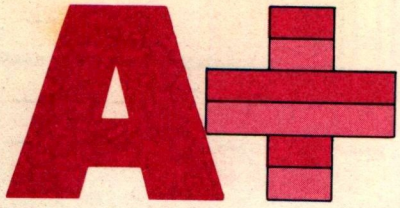

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Apple IIc	B	J
Apple IIe	C	K
Apple III	D	L
Lisa	E	M
Macintosh	F	N
Other (specify)	G	O
None	H	P

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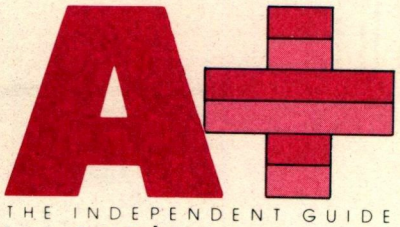

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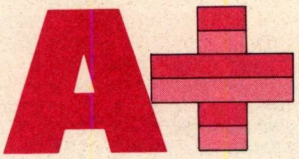

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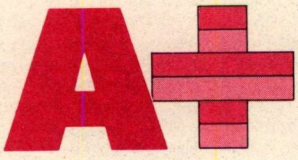

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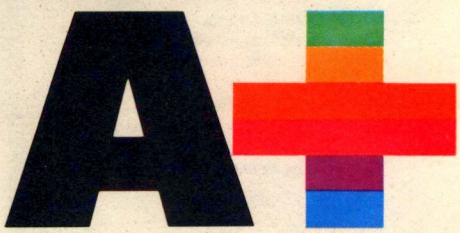

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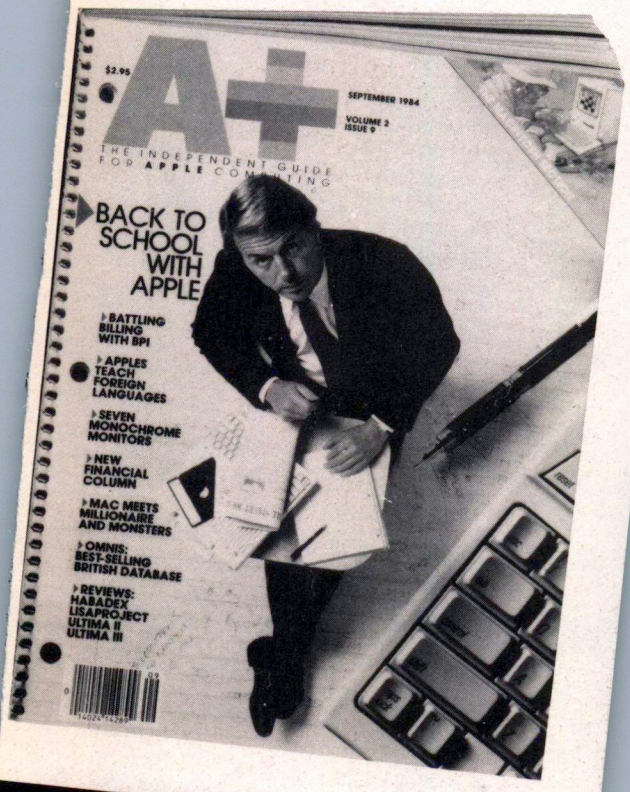

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